AMERICAN BEE JOURNAL

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Preparing Bees For Winter

By J. E. Crane.

WHEN I think of getting bees ready for winter I am reminded of the reply of a teacher to a fond parent who inquired the proper time to commence the education of his son. "The time to begin," said the teacher, "is with his grandfather." And the time to begin to prepare bees for winter is long before winter is upon us. Our fathers left the bees pretty much to themselves until frosty nights reminded them that winter was not far away, when they "hefted" the hives to see how many had honey enough for winter, and those that were found "too light" were smothered with the fumes of burning sulphur. How simple the process was! How much trouble it saved them! But we have learned something with the passing years. Man is said to be a creature that looks backward over the past as well as forward into the future. "Go to the ant, consider her ways," said an ancient wise man; but we do not even need to go to the ant. Everything about us teaches us the necessity of looking a long way ahead to secure the best results. How interesting to note how the potato and artichoke and other plants lay up a large supply of starch in their fleshy tubers so as to start quickly into vigorous life when another spring comes around! Even the trees and shrubs prepare buds in the axils of the leaves, that they may throw out their leaves next spring at the earliest moment. A horse chestnut before the window where I am writing takes pains to varnish its buds that not a drop or atom of water can get into the bud and do harm. How thoughtful everything is for the future, or some One for them! The bees themselves teach the same lesson, for they appear to look forward to the long cold winter and in their own way provide for it. Indeed, they would need very little assistance from us if we had not interfered with their orderly plans; but we have robbed them of their stores, divided their colonies, given them hives for homes, constructed more for our convenience than their comfort. If they were not the most patient little creatures in the world, making the best of everything, I should think they would take to their wings and fly away, but they don't, and we must try and make up to them as far as we can for interfering with their thrifty ways.

Their wants are really very simple. A vigorous queen, an abundance of worker bees, a good supply of honey, and some protection from the cold changeable weather of winter.

A young queen, as a rule, is more vigorous than an old one. Other things being equal, a colony with a young queen seems to winter better than with an old one.

In order that there may be a good supply of worker bees, there should be a good laying queen in the hive by August 1st, and enough honey and nurse bees to keep brood rearing going on at a rapid rate until September. If no honey is coming in, it may be necessary to feed even in August, to produce colonies as strong as they should be for winter. Of course, this is quite unnecessary when there is honey to be had in the fields.

It often happens that while there may be honey enough in the flowers or in their hives to keep them rearing brood till well into September, there may not be enough to carry them through the winter and spring until the flowers are again yielding nectar, for they may not have been able to lay in a sufficient supply, since we robbed them of their early summer stores; so we make it a point to look over every colony in September or early October and see for ourselves just how much every colony has, and set down against the number of each hive the amount necessary to carry them through the winter.

We do not feed until late September or October, when the brood is mostly out of the combs. Bees will raise brood much later in the season where there is a good flow of buckwheat or goldenrod or aster honey than where there is none. This seems to compensate in a measure for the loss of bees that wear themselves out in gathering it.

We feed sugar syrup made of two parts sugar to one of water. We do not usually add anything to it to prevent granulation, as the bees, as a rule, invert it enough so it does not granulate as much even as honey does.

How much honey or sugar syrup bees should have is a question. Certain it is that strong colonies should have their hives pretty well filled if they are to be wintered out of doors. If wintered in a cellar, less will be required. One man told me he could winter in a cellar on four or five pounds to the colony. In my own cellar I have found an average loss of eight or nine pounds by weighing when they were set into the cellar and when taken out. I have found the average loss when wintered outside just about twice this amount. As we can get stronger colonies by May 1st when wintered outside, we prefer to do so with most of our stock.

Where one has a good cellar or special repository for wintering, it is, without doubt, the best protection against the cold of our northern winters, but if not, double-walled and well-packed hives prove very satisfactory.

We prefer to reduce the size of the brood chamber for wintering unless the colony is very strong. This is especially desirable if, for any reason the colony is short of bees. We prefer strong colonies, but if from any cause, a colony has not built up as strong as we think it ought to be we either put two weak colonies together or reduce the size of the brood chamber to the size of the colony and pack carefully and heavily. Such colonies usually winter well.

I had almost forgotten to say that the summer entrance should be reduced in size. An inch hole, or its equivalent, is large enough for winter, but careful provision should be made so it does not get clogged with dead bees, for if the bees find themselves imprisoned they may worry themselves to death. Bees wintered in cellar should retain their summer entrances.

Vermont.

Waffles, Not Toast, Honey's Affinity

Toaster Campaign Slights Honey, But Waffles and Honey Are Wedded In Much Advertising

By Thomas E. Runyan.

THE "Toast for Breakfast" campaign is under way all right. I have seen worlds of advertising for it—bakeries all over the country selling electric toasters at $1.97 up, newspapers and bakeries co-operating in publishing coupons with which toasters could be purchased cheaply, a New York paper getting out an "extra" to grocers to push the plan, advertising by electrical dealers, items wired by the Associated Press to newspapers all over the country—yes, there's been plenty to remind the people of toast.

But honey was almost left at the post. In the mass of advertising I have seen from the four corners of the country it makes practically no showing.

Most of the bakeries have been talking about bread, toasters and toast to the exclusion of things that could be served with toast. Not so in the electrical merchandise line.

The world's largest electric store—the Commonwealth Edison Electric Shops of Chicago—ran a series of advertisments to tie up with the "Toast for Breakfast" campaign. Departing from its customary merchandising plan it was announced that the toasters could be secured at the neighborhood grocer's or the full line at the electric shop.

Plenty of suggestions for using other food stuffs with toast were made in the appealing advertisements of this concern. But honey was not included. It pictured "toast right at the table—piping hot and autumn-brown. Have it just as you like it—crisp and crunchy for the rich bacon or tender and delicate with marmalade." It suggested variety:

Toast for Breakfast

With bacon and eggs.

"Toast fingers" between the sausage links.

With apple butter.

Toasted cinnamon rolls with jelly.

Toasted baking powder biscuit with maple syrup.

Also for breakfast there were scrambled eggs and bacon, creamed codfish, goldenrod eggs, creamed ham and poached eggs with white sauce.

For noontime there were sandwiches for the school children and the rest of the family, too, using toast with lettuce and mayonnaise:

Cinnamon and sugar.

Currant jam and cream cheese.

Preserved figs and pecans.

Chopped olives and mayonnaise.

Peanut butter and piccalilli.

Grated cheese and pimento.

In addition to these there were ideas for dinner. Even later than that there were "Little Suppers." The toaster is lots of fun to use when friends gather on Sunday evening or after the movies any night. "With a jar of jam" and then another list.

Honey was not in it at all.

In my work of scouting for merchandising ideas and trends for the electrical papers I keep pretty well posted on what is being done in that line all over the country and there is no noticeable movement toward popularizing toast and honey.

Waffles and honey make an attractive and most appealing combination that will find a place in almost any home. (Photo by courtesy of "Electrical Merchandizing.)

But waffles and honey—that's a different matter. You think of waffles and honey being paired together almost as naturally as ham and eggs, corned beef and cabbage, or Mr. Gallagher and Mr. Shean. Let it be said right here that the use of waffle irons, both electrical and ordinary, is increasing.

Even though the world's greatest electric shop may omit honey when it seeks to create more toast-eaters, it says "nothing else but" when it pictures the delights of an electric waffle iron. For instance:

"How John Alden's Priscilla would marvel at the ease of cooking electrically right at the table. And these new appliances with their grace and

gleaming finish, conform to the elegance of other table appointments.

For Thanksgiving Breakfast

Hot waffles and honey!

The Universal Waffle Iron makes four golden, tender waffles at once on an aluminum griddle—no grease or smoke."

In all its Thanksgiving advertising the waffle iron was given a prominent place like leading off the advertising news or in the upper left hand corner of a panel— and with the invitation "Hot waffles and honey for Thanksgiving breakfast!" This store pushes the waffle iron, month in and month out, giving it a little stronger push at Easter, at the season for brides and other special occasions.

This is mentioning just one big concern, but all the country dealers featured the electric waffle iron as a Christmas gift. And the two best looking and largest advertisements of the waffle iron that I saw for the holidays were run by dealers in Toronto, Canada, and Honolulu, Hawaii, respectively. There's range for you.

One of the biggest restaurants in Chicago will serve you maple syrup or honey, as you desire, with your waffles, but in its liberal advertising it is a "breakfast that challenges all competition—Honey Waffles — with bacon or sausage."

It is true that there are more electric toasters in use than waffle irons —and more spreads for toast, too. It was estimated that only twelve out of a hundred wired homes had toasters. A waffle iron maker said that only one wired home out of ninety had a waffle iron.

Heretofore the electric waffle iron has been regarded as a costlier device. In its table, the Society for Electrical Development listed it at from $16.00 up. New irons on the market are listed to sell at $9.00 each. Some persons have been suspicious that the waffle iron being a larger device than the toaster would consume much current and be more expensive to operate. The Society for the Electrical Development says that the average use per year is 30 kilowatt hours per week and that of a toaster 35. The Tennessee Public Service Information Bureau announced that based on a rate of 12 cents a kilowatt hour a waffle iron would cost the average family from 12 to 30 cents a month and a toaster 10 cents.

Beekeepers would not find the waffle-honey market as large in number of prospects as the toast-honey field. But there is less resistance to overcome because, as I have remarked, honey and waffles are like brothers. Off hand you might reasonably assume that owners of electric waffle irons are more well-to-do because they invested in the appliances when they were higher. But as time goes on, merchandising methods will be used which will get a wider distribution for waffle irons in all kinds of homes. In many places now they can be purchased for a small payment down and the balance in monthly installments with the electric light bill.

Nor should the steady favor for the staple waffle iron, that is used over the gas or coal stove, be forgotten. I cannot say for certain that sales of that type are heavier than ever before, but the fact that department stores feature them as leaders is always a good guide.

One company makes a toy waffle iron that is bound to introduce the waffle habit in many homes. It is an exact miniature of the larger iron made by the company and sells for 50 cents. This toy has a fascination for the youngsters; a little niece who was showing me two she was going to send to her far-away cousins at Christmas time, declared that Mary Jane, her chum, had "actually baked waffles on hers."

Altogether, it seems to me that here is a market that hooks up with honey better than the average.

At any rate, the world's largest electric shop seems to think so.

Comb Honey In Cartons

All the large honey producers who have produced honey both in sections and in extracting combs know that bees work more readily in large combs than in one-pound sections. The reason is obvious, for bees gather honey for their winter's needs

and do not wish to put it into little rooms where the cluster has to divide in order to occupy them. That is why bees will work in large combs in preference to sections, even if those combs are farther from the brood nest.

On pages 420-21 of our September number, the editor mentioned a visit to the apiary of Mr. James Hilbert, some eight miles from Traverse City, Michigan, where he saw cut-comb honey in cartons put up by this gentleman and ready to be delivered to the trade. Mr. Hilbert takes advantage of the fact that the bees prefer the large combs and produce honey more readily in them. There may also be a little advantage in the prejudice that many consumers have against the perfection of the sections as produced by our modern methods; for many people imagine that broken combs are more likely to be pure honey than that in the beautiful sections. At any rate Mr. Hilbert finds ready sale for those cartons of honey. They are cut from long, shallow frames, in full pound blocks, three to the frame, allowed to drip in a warm room,

wrapped in paraffine paper, then placed in the cartons. He sent us two pounds by parcel post, in very nice condition. He wrote:

"I am shipping my crop to Chicago; it is already sold. The only trouble is that I cannot produce enough. The summer was cold and wet and my total crop was only about 14,000 pounds.

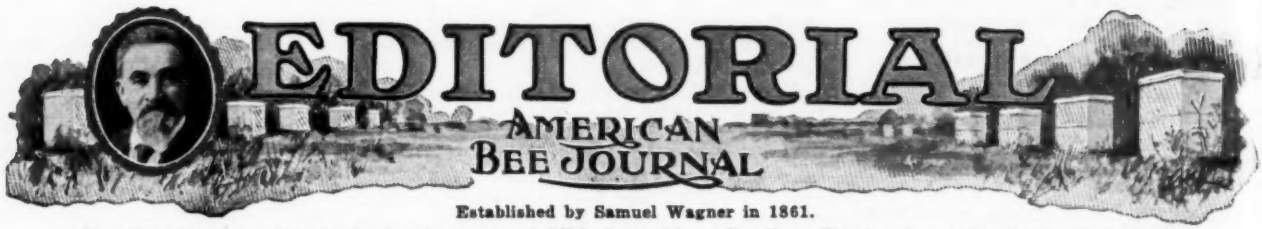
"The advantage of this package is that the honey costs less to produce and sells for more. The dealer has no breakage to suffer and it is a sanitary package in every way."

Without doubt, if we could produce the honey in sections as cheaply as in this manner, it would be better, although the customer is usually so ignorant of the methods of production of honey that he prefers bulk combs and broken combs, such as his grandfather secured from bee trees, to the prettiest article in sections. But we need to induce him to eat more honey. By and by, he will learn exactly how honey is produced and will be less suspicious of the finest sections. But bees will always prefer to produce their honey in large combs and will sulk less when storing it in that way.

Bees To the Skyline

We take the following from the "Wyoming Beeline," published by the Wyoming Beekeepers' Association:

"We have just taken a colony of bees to the Snowy Range, Albany County, where their pasture will be among the rich and abundant flora of an altitude ranging from 11,000 to 12,000 feet. The colony will be kept on scales, so that variations in the honeyflow may be noted. If an important honeyflow is discovered, the honey flora will be studied. The bees were placed in a single packing case so that the brood chamber will be protected from the cold nights. When we put it out (June 20), there were snow banks on all sides."



Established by Samuel Wagner in 1861.

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Evolution?

The question of evolution appears to be wide awake on both sides of the ocean. Now comes Mr. V. Dumas, in the Toulouse, France, "Despatch," with an article suggesting that the living of the honeybee in communities was due to their having had to suffer, when living in isolated conditions, both from the cold and from the necessity of protecting their stores. From this he deduces that when man becomes more intelligent than he now is, he will also see the necessity of associating with one another to thrive. Well, man has associated, for he now lives in commonwealths instead of the isolated stage of prehistoric times. Yet, we can learn a great deal from bees, for they have no revolutions, no murders within the commonwealth, and each works for the good of all. We have a long step to follow before we get to that. The desire of beating our neighbors, so as to live more comfortably than they do, will probably be, for a long time to come, the impulse of the human race. The idea of all working for the common good, as the bees do, is very beautiful. Let us hope that the great-grandchildren of our great-grandchildren may see the wisdom of it and our own foolishness.

Still further, perhaps the commonwealths of human beings may get beyond the devotion to each other of even the honeybees. There is the same spirit of enmity between colonies of bees that exists between nations, the self-sustaining idea at the expense of the foreign commonwealth. Occasionally, we see what is lacking in the bees, a little generosity, a little devotion to the welfare of a foreign creature, which expresses itself in gifts. Yet how little of this compared with what it might be! But we are at least a little ahead of the bee in this, for they have no generosity from one hive to another.

Portraits Of Celebrities

The "Revista De Apicultura," published in the Argentine Republic, is giving the picture of one of the most noted beekeepers of the World, on the front cover page of each of the numbers. It has already published: In October, F. Huber; November, Dzierzon; December, Langstroth; January, Chas. Dadant; February, A. I. Root; March, Berlepsch; April, Jose Patricio Larrain Gandarillas, a noted Chilian beekeeper who imported the first Italian bees into Chili; May, our own Dr. C. C. Miller.

South America is evidently wide awake.

Increasing Honey Sales

We learn that Mr. V. Dumas, elsewhere mentioned, living near a large city, Toulouse, France, has succeeded in inducing some 600 grocers of that city to keep his honey on sale. According to the Rand-McNally Atlas, Toulouse is a city of 150,000. Mr. Dumas is setting us a good example. Many of our large cities ought to be canvassed carefully by the honey producers.

Mating Italians and Blacks

One of our friends in Algeria, Mr. McClanahan, writes: "Did you ever remark that some strains of Italian queens go a long ways in search of black drones and vice versa black queens seek Italian drones?"

This opens up another channel of discussion. However, it seems to me that in the mating, the queen has little choice, for she is pursued and the fleetest drone most probably is the winner. I have often seen Italian queens mated with black drones, sometimes from hives as far away as 4 miles. On the other hand, I have seen many colonies of common blacks, in the vicinity, show the mating with our own Italian drones. But my explanation of these facts is that, on the one side the colonies of black bees produced drones in much greater number, at the time when this happened, which gave a better opportunity for mismatings. On the other hand, as we reared the most vigorous stock of bees that we could secure, our drones, later, though less in comparative numbers, were very probably more vigorous than those of the common stock.

What do our queen breeders say? Some of them, John M. Davis, for instance, manage to do away with all the black stock in the vicinity, and thus have little chance of comparison.

Too Much or Too Little Honey In the Brood Nest

Bear in mind that, in comb honey production the bees are likely to crowd as much honey as they can in the brood nest. This is due to the fact that bees do not like to store their surplus in narrow boxes and also that they have to build the combs. But in extracted honey production the bees are likely to store too little honey in the brood nest for winter. This is due to the supers being usually very roomy and with ample built combs and also of easy access to the brood chamber. So in the production of extracted honey it is necessary either to crowd the bees for room towards the end of the crop, or to feed them as much as necessary after the crop is over. The Canadian beekeepers generally feed quite a lot of sugar syrup, in the fall, this being placed in the most available place in the brood nest helps to insure good wintering.

What Progress and Improvements Can We Make? (April, Page 161)

A reply comes from Massachusetts, by S. W. Dyer:

Make experiments upon the nutritive value of honey as food and medicine, following the work of Dr. McCullum of Johns Hopkins University on rats and human beings. Imitate the work of the "Edible Gelatine Manufacturers" who have proved by experiments the food value of gelatine. Today we can say that honey is an invert sugar, but so is corn sugar. Can we prove positively that honey is worth the price asked? Let us be backed by authorities known to the public, or at least to physicians.

"Nothing but money
Is sweeter than honey."
—Poor Richard's Almanack,
By Benjamin Franklin, 1735.

Shipping Combs of Diseased Colonies

We have had enough correspondence upon the above subject, in the past two months, to more than fill a number of the American Bee Journal. Most of the arguments given are from a personal point of view, which makes them worthless for general purposes.

The only worth while reply received was from a Wyoming beekeeper who explains that they now have a very stringent law in that state concerning foulbrood. He also states that the beekeeper who wishes to be sure of not buying disease wants bees in combless packages.

We received, however, a suggestion which is good. All agree that honey is the worst transmitter of disease because the germs of foulbrood may be floating in it. But honey is not used or usually intended to feed bees. So the danger from it is minimum. But used combs and hives in which bees have lived are intended to be used in the apiary. Therefore they are a worse transmitter of disease than honey.

Let us all see that our state laws are fully enforced and let us join hands in putting a ban on anyone who ships anything, whether honey, or bees, or combs, which is tainted with American foulbrood. A statement in the July "Dixie Beekeeper" would indicate that even certificates of inspection are not always reliable. Alabama found it out, to its loss.

Let this end the discussion which would easily end in a dispute, if we allowed hotheads to say all they want. The average reader is not interested in high words.

To Prevent the Growing Of Grass In Front Of the Hives

Every beekeeper knows how fast the grass grows in front of the hives in the apiary. This is said to be due to the great fertilizing power of dead bodies of bees. A Swiss apiarist, A. Porchet, in the Bulletin D'Apiculture of Switzerland, July number, gives his method for stopping the growing of grass in front of the colonies. He dilutes 25 pounds of salt in 25 gallons of water. This is used to sprinkle the ground and, he says, if it is put on while hot, the effect is enhanced.

Hruschka

Our attention is called to the fact that the biographies of Hruschka differ, those by Alfonsus and by Kitzberger being slightly different from that given in L'Apicoltore at the time of Hruschka's death in 1888. But it is very clear, from all accounts, that he died a poor man, never having tried to make money from his inventions and having been drawn into unfortunate speculations in his old days. His name will remain, however, as that of one of the benefactors of the human race.

Recognition For Metric System

One fact looms very prominently, when we read scientific studies. It is that our men of science appreciate the metric system and use it. It is getting time for us to leave the old systems of weights and measures. The metric system is exceedingly simple, but seems difficult at first sight. Let us get our children to learn to use it and set aside those innumerable names that even our school teachers cannot remember. America is too progressive to stay much longer in the old rut.

Heated Honey Loses Its Medical Properties

In "L'Apiculteur" for July, Mr. Caillas, the author of "The Treasures in a Drop of Honey," makes the statement that, when honey is heated above 63 degrees Centigrade (146 F.) the heating destroys the diastase, invertin, which the honey contains and which gives it its most remarkable properties. It also destroys, he says, the vitamines which the honey possesses. He quotes the advice of a physician to **boil the honey,** and strongly condemns it.

As honey also loses its fine flavor, when it is heated, we must, more than ever, advise as much as possible the use of it in its natural state. But if it must be heated, let us not go beyond the degree stated, 146 degrees Fahrenheit.

Bees at the Oklahoma Fair

The proposed apiary building at the Oklahoma Free State Fair grounds, mentioned in our editorials of February, page 56, has not substantiated, probably for lack of funds. It is put off till next year. Meanwhile, Oklahoma is putting forward a big effort for the benefit of the bee. Its apiary section is under the superintendence of our old friend J. F. Diemer, whom Glen V. Mills calls "the homeliest fellow in the world." If Diemer could not take first prize for beauty, he is an excellent beekeeper and his department at the Oklahoma State Fair, at Muskogee, is offering $491 in premiums on bees, honey, beeswax and preparations of honey. The only drawback, as far as we are concerned, is that exhibitors must be residents of Oklahoma. The date of the Fair is October 3 to 10.

Demonstration Apiaries

We have given statements concerning the advantage, usefulness and profit of demonstration apiaries as carried on in Iowa. We cannot too strongly urge this method of educating the beekeepers to improve their methods. The editor made the trip with the state officials in 1923, through a number of these demonstration apiaries and appreciated the work. It is continued and enlarged. Iowa is holding its place among progressive states.

The report of the Iowa State Apiarist for 1924 is in our hands. There are some as good, in other states, none better.

Bee Flight and Aerial Navigation

A 46-page bulletin on the above subject by Dr. Paul Amans de Montpellier, is said to be exceedingly interesting, as it shows the anatomy and physiology of the flight of bees and compares it with the flight of aeroplanes. The author was granted a gold medal. This booklet was published in Brussels, and we have ordered a copy of it. We will mention it again if it proves as interesting as it would appear.

We found the above information in "L'Apiculture Rationelle, July number, page 198.

Brood In Extracting Combs

Every day we hear some new idea. One sometimes finds a little brood in extracting combs. Mr. H. Stassart, in "L'Abeille & Sa Culture," of Huy, Belgium, tells how, in a case of that kind, they prevent the young larvæ from being thrown out and even prevent a patch of dark honey from being extracted, by simply laying a piece of paper of proper consistency over the objectionable patch. In this way the covered part remains within the cells.

Educating the Customers

Concerning our editorial, page 316, about the above question, W. H. H. Stewart, of Emerson, Illinois, writes: "If old Mrs. General Public knew as much about honey as you and I do, we could not get 3 cents a pound for it. No one but the peasant class of Europe would eat honey." What sort of honey does our friend Stewart get? Or has he just turned sour and is he using his honey to make vinegar?

Invert Sirup For the Winter Feeding of Bees

By J. J. Willaman, University Farm, St. Paul, Minnesota.

BEEKEEPERS have long followed the practice of feeding bees a sugar sirup for their winter ration. In most cases a rather thin sirup of granulated sugar (sucrose) is used. In others, the sucrose is converted into invert sugar by boiling with tartaric acid before feeding. The best beekeepers, and those who have studied bee feeding scientifically, emphasize the great desirability of feeding invert sugar instead of sucrose. Since the latter is largely indigestible for the bees, they have to invert it themselves, and it is desirable not to have to depend upon this during the cool fall weather.

The inversion of sucrose by boiling with acid under the ordinary apiary conditions is not free from objections. The acid induces side reactions with the production of a disagreeable color, odor and flavor in the sirup. Within very recent years there has become available a commercial enzyme which will invert sucrose without the above objectionable features. The enzyme is similar in its nature to those in our digestive system which prepare our food for assimilation. It is the same enzyme that the bee secretes for the inversion of the sucrose in the nectar. This enzyme is called invertase. The present article describes the method of making invert sirup by means of this enzyme.

The Chemistry of Honey

The principal sugar in the flower nectar is sucrose, the same as granulated cane or beet sugar. This sugar is apparently not available as such to animals, including bees, since the digestive tracts of animals are provided with an enzyme which converts it into other simpler sugars. This particular kind of chemical conversion is called inversion. It can be represented thus: Sucrose 342 plus water 18 equals glucose 180 plus fructose 180.

This indicates that one molecule of sucrose combines with one molecule of water to produce one molecule of glucose and one of fructose. The figures indicate the parts by weight involved in the reaction. Thus 342 pounds of sucrose combine with 18 pounds of water and form 180 pounds of each of glucose and of fructose. The mixture of equal parts of glucose and fructose is called invert sugar. The water in the above reaction is chemically combined, and is not merely mechanically mixed with the sugars as when we dissolve sugar in a glass of lemonade.

Now, the bee seems to need invert sugar instead of sucrose. While the nectar is in the honey pouch of the bee there is secreted into it the enzyme invertase. This is the same enzyme that is found in the pancreatic juice of higher animals, as well as in yeasts and other micro-organisms, and its function is to bring about the above inversion of sucrose to invert sugar. The invertase begins its action immediately and continues it even after the nectar is deposited in the comb. In fact, the analysis of hundreds of samples of honey from all parts of the world shows that in the great majority of cases the inversion is almost complete, only a small proportion of sucrose remaining in the final honey. In other words, honey is essentially an invert sirup.

Commercial invertase is prepared from yeast and has all the properties of the enzyme secreted by the bee or by the pancreas. It is purified and concentrated to such an extent that it can be used for the preparation of invert sirup without the latter acquiring any appreciable off flavor.

Characteristics of Invertase

Enzymes, or ferments, as they are sometimes called, bring about chemical reactions by their mere presence in the solution. They apparently do not take part directly in the reaction. Hence in the reaction given above for the inversion of sucrose the enzyme does not appear.

The enzymes change their activity markedly with change in temperature. At or near the freezing point they are practically inactive. With increasing temperature their activity also increases, approximately doubling for each rise of 20 degrees F. It reaches a maximum, however, at about 120 to 150 degrees F. From then on the enzymes are adversely affected, and at about 170 to 180 degrees F. they not only lose their activity, but are destroyed.

Each enzyme also has a certain optimum acidity or alkalinity for its action. Thus the pepsin of the stomach requires a strongly acid, the tripsin of the pancreas, a weakly alkaline, and invertase a weakly acid, medium.

Another characteristic of enzymes is that their activity is continuously retarded as the end-products of the reaction accumulate in the solution. In the case of invertase, for example, as the sucrose becomes less and less, the invert sugar more and more in amount, the speed of the change becomes much reduced. To illustrate: Suppose we call all the sucrose present in the beginning 100 per cent. The first 10 per cent of inversion may take place in 35 minutes; the second 10 per cent in 50 minutes; the fifth in 70 minutes; the eighth in 12 hours; the ninth in 24 hours, and the tenth in 7 days. Thus in a total reaction time of about 10 days, the first 10 per cent took only 35 minutes, while the last took 7 days. Of course the above holds true only when the enzyme and the sucrose, say, are mixed together in a non-living container, as a kettle. In our own digestive system the products of digestion are absorbed by the body almost as fast as formed, and possibly fresh enzyme is continually secreted.

Another fact in the speed of enzyme action is the concentration of material involved, in our case sugar. The more concentrated the solution, the slower is the action. This is true especially in concentrations from 50 to 75 per cent. The reaction is very greatly retarded in the latter. In fact it has frequently been said that such sirups are not inverted by invertase; and it is usually recommended that concentrations not greater than 40 or 50 per cent be used, and that this be concentrated afterwards to the desired density. Since most beekeepers are not equipped for boiling down such heavy sirups, the writer has worked out the present procedure which avoids this trouble.

The above characteristics of enzyme action are reviewed here in order that the beekeeper who intends to use commercial invertase will have a little better understanding of the nature of the materials with which he is working.

Materials

Sucrose. The sucrose used should be standard granulated cane or beet sugar. Brown sugar should not be

Table I.

Approximate time in days required to produce 80 per cent and 100 per cent inversion of sucrose at three concentrations of sucrose, three concentrations of invertase of "k" value 0.0012, and four different temperatures. (The figures in parentheses are only roughly correct.)

Per cent Inversion	80° F.		100° F.		120° F.		140° F	
	80	100	80	100	80	100	80	100
3 ounces Invertase per 100 Pounds Sirup								
Per cent Sucrose—								
60	3.3	20	1.4	10	0.7	3	0.4	1.5
70	3.8	(200)	9	60	5.5	25	2.2	10
75	(200)	--	37	--	15	90	6	35
6 ounces Invertase per 100 Pounds Sirup								
60	2.3	12	0.7	4	0.4	2	0.3	1.2
70	18	(120)	5	30	2.2	13	1	6
75	--	--	19	(140)	7	26	3	16
12 Ounces Invertase per 100 Pounds Sirup								
60	1.4	6	0.3	1.2	0.2	1.0	0.1	0.7
70	9	38	2.3	9	1.2	6	0.4	2
75	50	--	10	38	4	18	1.6	10

used, as its impurities will leave a residue in the digestive tracts of the bees.

Invertase. So far as the writer knows, there are three manufacturers of invertase in the United States. Only a preparation whose activity is know in terms of its "k" value should be used. The "k" value is a mathematical term which need not be explained here. All of the present work is based on invertase with a "k" value of 0.0012. If a preparation of "k" value 0.0024 is used, one-half the stipulated quantity will suffice, and so on for other activities. The following is a list of the manufacturers of invertase, and the activities of their preparations as found by the writer:

Wallerstein Laboratories, 171 Madison Avenue, New York City, manufacturers of "Convertit"; in two strengths, of "k" value 0.0024 and 0.0012, costing $4.50 and $2.25 a pound, respectively.

Digestive Ferments Company, Detroit, Michigan, manufacturers of "Invertase Difco Standardized." with a "k" value of 0.0006. Price, 1 pint 60 cents, 1 quart $1.00, 1 gallon, $3.75.

Industrial Research Laboratories, 220 W. Ontario Street, Chicago, manufacturers of "Invertase," of "k" value 0.0004. Price, $1.50 per pint.

The latter two companies do not specify the "k" value on the package, but the above values can be accepted as sufficiently correct.

Thermometer. Although it is not necessary to have a thermometer for the present work, it is very desirable to have one. Any reliable thermometer such as are used in creameries, the bulb of which can be immersed in the sirup, and which reads up to 140 degrees F., can be used. The Fahrenheit scale is used in the present discussion because such thermometers are commoner than the centrigrade.

Litmus Paper. It is desirable to have a few pieces of blue litmus paper on hand. These can be obtained from any druggist at practically no cost.

Acid. For acidifying the sirup for proper invertase action, a small amount of citric or tartaric acid should be obtained. If this is not convenient, a strong vinegar, preferably white, may be used.

Containers. Almost any container of suitable size other than those made of copper can be used in making the sirup. It must have a cover. A means for heating it must be provided, as will appear below. A milk can is a very convenient utensil for this purpose

Table II. Weight per Gallon of Various Solutions

Material	Weight per Gal.
Water	8.2
Invertase	8.2
Sirup, 60 per cent of sugars	10.7
Sirup, 65 per cent of sugars	11.0
Sirup, 70 per cent of sugars	11.2
Sirup, 75 per cent of sugars	11.5
Sirup, 80 per cent of sugars	11.8

Choice of Conditions for Making Sirup

Bearing in mind the characteristics of enzymes as described above, the reader can now follow with understanding the procedure outlined below for the preparation of invert sirup. The writer has prepared a table, based on experimental measurements, showing the time required for the inversion of various concentrations of sucrose, at various temperatures, and with various additions of invertase. Thus, suppose one chooses to make a 70 per cent sucrose solution and to add 3 ounces of invertase, and can maintain it at a temperature of 80 degrees F., by referring to the table, it will be seen that after 38 days it will be 80 per cent inverted. If it can be maintained at 140 degrees F., it will reach 80 per cent inversion in a little over two days, and it will be completely inverted in ten days.

Thus one can get from the table the facts concerning any combination of conditions that one happens to have, within the limits of the table, of course. What combination one chooses, will depend on circumstances. It is economical to use as little invertase as is practicable, but greater speed can be obtained with the larger quantities. As regards the density of the sirup, a 60 per cent sucrose solution is rather thin for feeding bees, bearing in mind that honey is 80 per cent or better. This thin sirup can be evaporated, after inversion, to a greater density, but this is rather a nuisance for most apiary conditions. A 75 per cent sirup is about the heaviest that can be used, since even with this density there is some crystallization of the sucrose before inversion proceeds far enough.

It will be noted from the reaction stated at the beginning of this article that 342 pounds of sucrose produce 360 pounds of invert sugar, because of the water that is chemically combined in the process. On this basis a 60 per cent sucrose sirup becomes a 63 per cent invert sirup, a 70 per cent becomes a 73.5, and a 75 per cent becomes a 79 per cent. This latter sirup has very nearly the same consistency and physical appearance as honey. In fact it can be considered as an artificial honey.

The reader will not take offense, we hope, if he is reminded that a 60 per cent sucrose solution means one containing 60 pounds of sucrose for each 40 pounds of water, making 100 pounds of sirup. It is simplest to weigh all materials. If it is necessary to measure by volume, Table II may be found useful. In measuring the invertase a fluid ounce may be considered equal to an avoirdupois ounce.

The temperature chosen depends entirely on local circumstances. The table does not imply that a constant temperature be maintained; it simply indicates what speed can be expected at the various temperatures. It is recommended that a temperature of 130 to 140 degrees F. be maintained as much of the time as possible. This can be approximated rather easily by warming the sirup each day to 140 degrees F., wrapping well with woolen blankets or other material and keeping in a warm place. But 140 degrees F. must not be exceeded.

Preparation of the Sirup

When the operator has decided upon the density of sucrose solution and the amount of invertase to be used, and has provided a suitable container and the other materials mentioned, he is ready for the specific directions.

Weigh the sucrose (granulated sugar) and the water into the container. Dissolve the sugar by warming and by continuous stirring with a clean wooden paddle. Usually by the time it is 170 degrees F. the sugar has dissolved. Remove from the source of heat and allow to cool. Add acid or vinegar until blue litmus paper is turned pink, allowing a minute or so at each testing for the color to change. When the temperature has fallen to 140 degrees F. add the required amount of invertase, insulate the container as well as possible, and put in a warm place. Sucrose crystals are likely to form at first. If they do, they should be stirred into the sirup once or twice a day until they redissolve, which they will do when inversion has progressed a ways. If the maximum speed of inversion is desired, each day the sirup should be rewarmed. If time is no object, it can simply be left in a warm place. By noting the temperature from time to time, and referring to Table I, the approximate time required for complete inversion and for 80 per cent inversion can be obtained. The sirup is ready for use when inversion is practically complete, although the reaction will continue after the bees have removed the sirup to the hive.

This invert sirup is so nearly like honey in its composition that its keeping qualities can be considered to be the same. In a cold place the glucose will crystallize, just as it does in honey, but will easily redissolve on warming. The sirup has the sweetness of honey, but of course it does not have the floral flavor and aroma. Its color varies from pale yellow to amber, depending largely on the temperature used in its preparation.

(Professor Francis Jager, of Minnesota University, who put us in touch with Professor Willaman, evidently helped him in the work, but modestly disclaims any credit. He wrote us as follows concerning the sirup prepared as mentioned above:

"I used, last winter, sirup for winter stores prepared as given out by Prof. Willaman. The bees winter on it perfectly; they do not wear themselves out storing and curing it, they cap it over at once."—Editor.)

The Patten queen mating apiary in early spring.

Wholesale Queen-Rearing

Modern Methods of Turning Out Young Queens In Large Numbers As Practiced In a California Apiary

By Frank C. Pellett.

QUEEN-rearing is the most fascinating branch of beekeeping and the apiarist who does not rear a few queens now and then is missing some of the poetry of his calling. Commercial queen-rearing, however is a very exacting occupation and few are adapted to succeed on a large scale. The queen breeder must follow a very rigid schedule and must make his plans for days ahead. Approximately sixteen days are necessary for the development of a queen from the time the egg is laid. Since the eggs hatch at the end of three days and the queen breeder makes use of very young larvæ, the cycle of his duties runs from ten to twelve days. Should he wish a holiday to attend a wedding or to go fishing, he must provide for absence ten days in advance and graft no queen cells which must have attention on that particular day. It often happens that a few days of bad weather will spoil all his plans and cause the loss of several batches of cells, with considerable loss.

A successful queen-rearing establishment must run like clockwork, and every detail must receive attention at exactly the right time. Untold thousands of queens are reared which are worthless because conditions were not right at some stage of their development. Some breeders are able to offer queens at a low price because they are able to produce them in very large numbers and thus keep down the cost of operation. A little extra care for each batch of cells adds materially to the cost of the queens when they are ready for sale, but properly reared queens are worth a great deal more than carelessly reared ones.

Equipment for Queen-Rearing

The beekeeper who rears a few queens for his own use will not need much special equipment. He can easily get an occasional batch of cells reared over an excluder with a queenright colony and give the ripe

Roy Patten, of Whittier, California, in his queen yard.

cells to the colonies to be requeened after removing the old one.

The commercial queen breeder, however, must have a large investment in special equipment, for large scale queen-rearing operations will not fit in well with honey production. First he must make provision for constant feeding at times when no nectar is coming from the field. Every colony will then require some kind of feeder which can be kept continually in use during a dearth of nectar. The honey producer feeds each colony which needs such attention heavily and is done with it for some time. Such feeding would defeat the object of the queen breeder, for he must provide conditions similar to a natural honeyflow in order to keep his cell building colonies at work. He must feed syrup as thin as the bees will take readily and keep it always before them when nectar is not coming in.

Since every young queen must be mated and have an opportunity to begin laying before she is sent to the customer, a large number of mating hives must be provided. Some breeders divide the standard hives into two or more compartments for this purpose and some use special hives holding three or four frames.

A Day With a Queen Breeder

On several occasions during the past ten years I have told in these columns about visits to various queen breeders from Georgia to California. There are a number of men who devote their attention to queen-rearing and who send out thousands of queens to our readers every year. Although their methods are very similar in many respects, each has some particular way of performing some of the operations which makes an account of his methods of interest.

In March it was my good pleasure to spend a day in the queen yard of Roy Patten, of Whittier, Calif. It was still early and Harvey Dunn, who had charge of the yard, was just getting into the swing of his work.

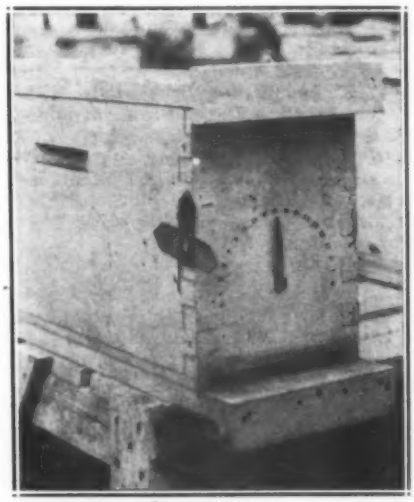
It is a big job to stock the large number of mating hives and to get the daily routine of grafting, incubating and introducing under way. When they reach capacity there are 1,400 nuclei in the yard. There were only about 500 at the time the picture was taken and the rest of the mating hives were still corded up beside the grafting house, as shown in the picture, with Mr. Patten and Prof. Vansell standing beside them. Mating hives can only be stocked with bees as fast as there are ripe cells ready for them, as these little colonies would soon be worthless if left queenless. After being queenless for many days it would be difficult to get them to accept one. Accordingly, the hives are stocked as fast as the early batches of cells are ready, and once the young queens begin laying they are permitted to remain long enough to insure a succession of young bees throughout the season.

Harvey Dunn and a tray of cells ready for the incubators. The hive body at his left is filled with empty cells.

The Day's Work

It is interesting to follow a queen breeder through his day's work. No two of them will do things in quite the same way, but there cannot be much deviation from the things which must be done. In the first place, comes the feeding, when feeding is necessary. With the field bees busy bringing in nectar from the field or syrup from the feeder, he can go about his business with little bother from stings. The queen breeder is of necessity concerned about having a strain of gentle bees. For his own comfort as well as the satisfaction of his customers this is of great importance. They are also interested in developing a strain of good honey gatherers. It is the repeat orders that make any business successful and the bees must do well for the customer if he is to continue to buy. Gentleness, productiveness and uniformity of marking are the three things receiving most attention in the selection of breeding stock.

Those who rear queens on a large scale usually have several breeding queens from whose offspring the young queens are reared. Most breeders buy the artificial queen cells now offered for sale by the supply houses, although some dip their own cells. These wax cups are fastened to strips of wood attached to ordinary brood frames with usually from 25 to 50 cells in one batch. For a long time it was thought that a small portion of royal jelly from an occupied cell must be placed in each one before grafting. Of late I find that many of the queen breeders have abandoned this practice. They simply place the frame of empty cells in a hive for a short time and give the bees a chance to polish them up. Young larvæ from the hive containing the breeding queen are then carefully lifted and placed one in each of the prepared cells.



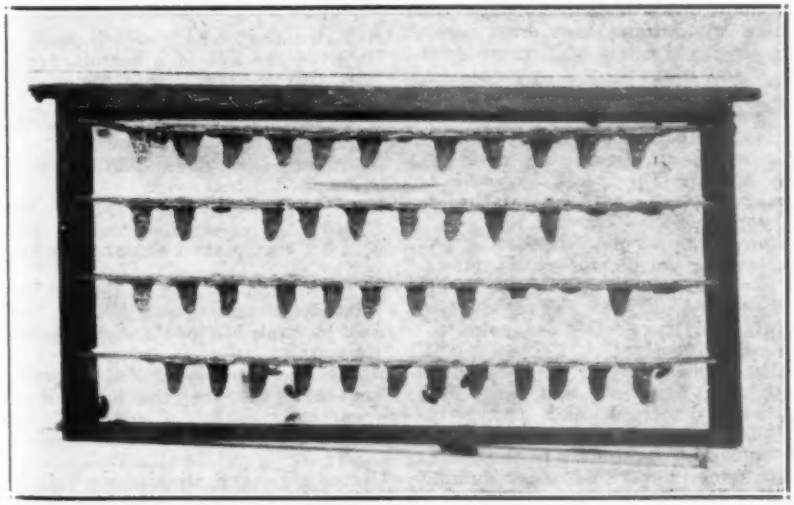
Mating hive with three-color marker to indicate whether it is queenless or has a virgin or a laying queen. Arrow shows date when cell is given.

Cell Building

These frames of cells are then given to a cell-starting colony. Some beekeepers use a very strong colony of bees from which the queen and brood have been removed for this purpose. Patten starts cells in a four-frame nucleus with two frames of sealed brood and one empty comb for honey storage. Since there is no unsealed brood present, the young nurse bees are well supplied with food, and a large part of the cells are accepted and liberally fed. It is, of course, important that these starting colonies be composed of young bees, as old bees are not good nurses.

As soon as the cells are well started they are removed from the cell-starting colony and placed above an excluder over a very strong colony of bees with queen in the lower story. The cells are thus cared for under conditions very similar to those built under the swarming impulse.

After the cells are sealed they are placed in nursery cages and removed to incubators. There are four large-sized incubators in the grafting house which serve the purpose of releasing many bees from the duty of warming the cells during the last



A good batch of cells.

Prof. G. H. Vansell and Roy Patten beside a big pile of queen-mating hives in the Patten queen yard.

part of their development and making it possible to greatly increase the output. Each of the incubator trays holds 200 cells in the cages. One picture shows a tray of these cells ready for the incubator and also a hive body filled with empty cells that have been discarded following the emergence of the young queens.

About the time the young queens are ready to emerge, the cells are placed in the mating nuclei so that each one will find herself where she is to remain until she is ready for her journey through the mails. The Patten mating hives are provided with three color markers which show at a glance whether they contain virgins, laying queens, or are queenless. As will be seen in the picture, there is also an arrow showing date when the cell was given.

A Yankee Beekeeper's European Rambles

2. Still In Ireland

By Harry Lathrop.

I HAVE now been in Ireland three weeks. In that time I have seen much of the south and west portions. I spent three days at Dublin, where there is much to interest a beekeeper. In the botanical gardens they have a great variety of trees and flowers, including all varieties of heather. Some of it is in bloom. In the mountains of the Killarney district, and on the bogs where they cut turf for burning, there are thousands of acres of it.

As the country is largely devoted to grazing there is—they tell me—much white clover. The lime tree (Linden) is plentiful. Then it would seem that Ireland should be a good country for bees. It has been. My friend, Rev. Digges, editor of the Irish Bee Journal, with whom I am staying just now, tells me they had a good local association in this part of County Leitrim some years ago. They have none now. On account of several adverse seasons and the ravages of disease, the bees in Ireland are practically dead. I could find no live bees in the mountains of Killarney, an ideal location. Heather, linden, white clover, and thousands of other flowering plants and trees. I saw one live bee working on heather in the botanical grounds.

There are one or two hives here at Mr. Digges' with live bees. But I tell them that these conditions will change and then they must again take up beekeeping with large modern hives.

It is an old beekeeping country. In Trinity College, Dublin, I saw an old law book in the Celtic language, hand work, on sheep skin done before 1350. The page exposed to view was a code of laws relating to beekeeping.

There is much good timber in Ireland and a local mill could manufacture hives and fixtures entirely from native timber. Trees grow rapidly and there has been some effort at reforestration. They plant, mostly, pine and fir. They have white oak, live oak, elm, ash, lime and horse chestnut, and many others. The horse chestnut should make the whitest of sections. In the states it is sometimes used for making braided hats.

I wish I could make my readers see the flowers of Ireland. Daisies, buttercups, primroses and blue bells are everywhere, also dandelion and blue violets. Great rhododendroms line the forest roads and along lake shores. The flowers are very large and showy. Some now in bloom are flaming scarlet. Then there are white and pink ivy; laurel and holly are everywhere. Holly is used for hedges, but not as much as the white thorn. Stone walls along shaded lanes accumulate moss, and along the top they have ivy, ferns and delicate flowers right along on the wall as though a gardener had arranged them. The country is very moist as compared with the Middle States. Many of the trees and vines are ever green. The fields by the 10th of May have luscious green grass 8 inches deep, if not pastured. It is all green everywhere the eye can see, except the few plowed fields.

For the past two years, and at present, the poor farmers are having a hard time. It rains part of every day, and their potato seed is rotting in the ground. Famine threatens, but they hope and pray for better conditions.

The people are friendly. Before closing I want to pay a tribute to my friend, Rev. Mr. Digges. He is a prince of hospitality and a jolly all-round good fellow.

In a few days I sail for England, and there I hope to find beekeeping conditions better.

A Fable

Said a wise old Bee at the close of day,
This colony business doesn't pay.
I put my honey in that old hive,
That others may eat and live and thrive;
And I do more work in a day, by gee,
Than some of the fellows do in three.
I toil and worry and save and hoard,
And all I get is my room and board.
It's me for a hive I can run myself,
And me for the sweets of my hard-earned pelf.
So the old Bee flew to a meadow lone,
And started a business of his own.
He gave no thought to the buzzing clan
But all intent on his selfish plan.
He lived the life of a hermit, free.
"Ah, this is great," said the wise old Bee.
But the summer waned and the days grew drear,
And the lone Bee wailed as he dropped a tear,
For the varmints gobbled his little store,
And his wax played out and his heart was sore;
So he winged his way to the old home band,
And he took his meals at the helping hand.
Alone our work is of little worth;
Together we are the lords of the earth.
So it's all for each and its each for all;
United we stand, divided we fall.
Moral—In large colonies there is strength.

Some Facts About Granulation

By Frank Van Haltern.

TRYING to cater to a trade that wanted liquid honey has caused me a lot of hard work, worry and loss of honey through overheating. I have a large tank that I set over an oil stove and partly fill with water. In this I melt my honey in 5 and 10-pound pails. I have been heating them at 140 to 150 degrees, Fahrenheit, for two hours, judging the temperature by that of the surrounding water.

Owing to the difficulty of controlling the temperature, and ignorance of how soon the honey in the pail reached the proper temperature, I had pails that were over-heated while others failed to melt completely. Honey that is cold and solid requires a long time to melt so that the outer part becomes over-heated before the inner mass is liquid. On the other hand, honey that is liquid and moderately warm, quickly reaches the temperature of the water and is easily ruined.

I find that if the pails contain the exact quantity of honey that they are intended to hold they do not leak about the lid when heated to 150 degrees. If too full the expansion of the honey often forces it out. When heated to 160 degrees, or higher, the expansion was often sufficient to force the honey out about the lids even though the pails were not too full.

Hoping to find a better method of handling my honey, I started an experiment on December 14, 1922, as shown in the table.

The treatment given ½-oz. vials of honey for the granulation experiment:

No 1. Not heated. Cork varnished.

No. 2. Heated to 145 deg. for 15 min. Cork varnished.

No. 3. Heated to 140-150 deg. for 2 hrs. Cork varnished.

No. 4. Heated to 140-150 deg. for 2 hrs. Cork not varnished.

No. 5. Heated to 140-150 deg. for 2 hrs. Opened for 10 min. when cool, then varnished.

No. 6. Heated to 140-150 deg. for 2 hrs. Added a drop of granulated honey, cork varnished.

No. 7. Heated to 140-150 deg. for 2 hrs. Air hole in cork. Not varnished.

No. 8. Heated to 140-150 deg. for 1 hr. Cork varnished.

No. 9. Heated to 105-110 deg. for 1 hr. Cork varnished.

Nine ½-oz. vials were filled with honey just taken from the comb and strained through cheese-cloth. Vial No. 1 was unheated, being used as a check against the others. Since air in the honey is supposed to be a factor that hastens granulation, the corks were varnished over after inserting. Nos. 4 and 7 were exceptions. I hoped to find out by No. 4 if there was enough leakage of air about the lids of pails to influence granulation. In the cork of No. 7 I made a large hole to admit air freely, hoping to determine the influence of air. No. 5 was left open 10 minutes after cooling to permit airing.

Nos. 2, 8 and 9 were run to determine the shortest time and the lowest temperature at which granulation could be prevented. A little candied honey was added to No. 6 to see if it would hasten granulation. No. 3 was given the same time and temperature that I had been using with my pails. In order to be more certain of my results, a duplicate set of vials was prepared.

On December 27, thirteen days later, No. 1 was solid and No. 9 was getting cloudy. The others were clear. March 1, 1923, 2½ months later. No. 1 was solid, No. 9 was 75 per cent granulated, No. 2 was well started to granulate, Nos. 2, 4, 5, 6, and 8 had just a few scattering flakes, while No. 7 was only a little more sugared than these five.

June 15, 1923, six months after starting, the vials showed the following percentages of granulation:

No. 1, 100 per cent.
No. 2. 20 per cent.
No. 3, 15 per cent.
No. 4, 15 per cent.
No. 5, 15 per cent.
No. 6, 15 per cent.
No. 7, 25 per cent.
No. 8, 15 per cent.
No. 9, 85 per cent.

November 14, 1923, after eleven months of the test, the percentages were about the same as in June, except that No. 7 had risen to 40 per cent granulation. During the winter of 1922-1923, the vials were kept in the honey house where they were occasionally subject to freezing temperatures. The winter of 1923-1924 they were kept in the house, probably never getting colder than 40 degrees, and usually being at ordinary room temperature.

The last examination was made December 10, 1924, which was two years after the experiment started. There was a remarkable uniformity between the two sets of vials, the results in corresponding vials being nearly the same. They showed the following percentages, the numbers being arranged according to rank in percentage of granulation:

No. 4, 30 per cent.
No. 8, 32 per cent.
No. 6, 32 per cent.
No. 5, 40 per cent.
No. 3, 40 per cent.
No. 2, 45 per cent.
No. 7, 60 per cent.
No. 9, 90 per cent.
No. 1, 100 per cent.

It is evident that all the treatments did some good. No. 9 was little better than no heating, since it was cloudy enough to injure its sale two weeks after heating, and was nearly solid by spring. Apparently, No. 9 was not made hot enough, for No. 8, which was heated the same length of time —1 hour— but was heated to 140-150 degrees, kept about as good as any. Now, if we consider No. 2, it is seen that temperature had more influence than the length of time for it was heated only 15 minutes at 145 degrees and ranked about medium in granulation.

The effect of air on granulation may be seen in vial No. 7, which had a hole in the cork and granulated 60 per cent, which is about double that of others that were sealed tight. Apparently, such air as came in about the unsealed cork of vial No. 4 did not hasten granulation, since this vial kept best of all. For some reason No. 3, which was treated the same as No. 4 except that the cork was sealed with varnish, granulated more than No. 4. Judging by No. 5, granulation is not materially hastened by the airing received when we open a pail to show the honey to a customer.

Introducing a "starter" in the form of a small lump of granulated honey did not seem to influence granulation, although the crystals appeared to form first in the region of the lump. This seems strange to me in view of the fact that it has always been my experience that honey taken from the extractor without straining will granulate much more rapidly than that which has been strained through two thicknesses of cheese-cloth.

I have not tasted the honey in these vials to determine if the flavor was injured by heating, as I desired to keep them a little longer to learn how long it will be before all are granulated.

The conclusion I have come to, as a result of this experiment is, that hereafter I will heat my honey—if I heat it—only one hour at 140 to 150 degrees. I am satisfied if I can get my honey to my customers in a liquid state and have it remain so for a few months. Some of them use it up before that time and never suspicion that there is such a thing as granulation of honey. Others rather expect it to sugar in the course of time. Some even read the label.

All the trouble and expense I have been put to on account of liquefying sugared honey have about converted me to the idea of selling my honey without heating. There are so many things that the average customer does not know about honey that the matter of granulation will not add materially to our educational advertising.

Iowa.

Personal Recollections of the Editor

Comb Foundation — When and How Did Comb Foundation Start?

IN 1857, Johannes Mehring, a German, manufactured a press on which he printed the rudiments of the cells upon sheets of wax. This was a very shapeless process. A little later, in 1865, a Swiss beekeeper, Peter Jacob, made some sheets with the imprints of the cells of the bees and sold one of the machines to make them to Henry Steele, of Jersey City, as mentioned in the second volume of the American Bee Journal, page 211, May, 1867. Mr. Wagner, the editor of the American Bee Journal, meanwhile had taken a patent upon the idea of manufacturing the foundation upon rolls or cylinders. On March 8, 1871, A. I. Root wrote us that he had ordered such a machine from Mr. Wagner; but evidently Mr. Wagner had never put his patent into practice, for Root never received it.

The time was coming, however, for such an invention to be produced. In 1874 Fred Weiss, of New York, made such a mill. At last, in March, 1876, A. I. Root announced, in his Gleanings, that he and a machinist by the name of Washburne had succeeded in making good mills. He offered them for sale. In 1878, after having tried the sheets, we ordered a mill from him.

This was our first attempt at comb foundation making. We succeeded beyond our expectations. But it was not without trouble. The first mill had slight imperfections, so that when we tried to make a well printed sheet, the mill would cut the cells here and there. The most we could succeed in making was 8 sheets, L. size, per pound. We wanted 10 or more. I went to work at a table in a good light, running a sheet through, after having marked both the sheet and the mill at the proper spots. Then, with a jeweler's chisel, very sharp and properly beveled, I trimmed lightly the defective cells of the machine. After three days of work, I had brought the machine to the point of readily making ten sheets to the pound, instead of eight.

A little later, in 1880, we read of another maker of mills, Mrs. Frances Dunham, of Depere, Wisconsin. She had two brothers who were machinists and it was in their shops that her mills were made. We ordered a mill from her in December, 1880. It came in time for the spring work. This machine was good, but its principal quality resided in its making a very heavy cell wall, with a round cell. It was difficult to make more than six square feet per pound with it. But the goods were quickly accepted by the bees, and we saw then that it was an error to make too light a foundation for the brood combs, for the advantage of the Dunham resided in an ample supply of wax in the foundation for the bees to build the entire comb.

I began to suggest to the makers of mills that it was necessary to make mills of different depths of cell walls if we wanted to supply goods that would give satisfaction in several different weights. We needed foundation of great lightness for surplus combs. In 1881, there loomed another manufacturer of mills, John Vandervort, of Pennsylvania. He caught on my suggestions that each mill should enable the manufacturer to make a thin base foundation, and we began to have mills of four different grades, and with his mills we had no trouble in making 12 and even 13 square feet per pound. I say "no trouble," but it is not correct; we had a great deal of trouble at first, for the mills chewed up the wax in great shape, when they had the least imperfection.

In 1883, I attended the Northeastern Convention, at Syracuse, N. Y. Vandervort was there and I went with him to his home at Laceyville, where we studied the question of foundation making, on all sides.

Vandervort was a man of golden disposition. He had been a beekeeper in Illinois and had sold his bees to the late Dr. Miller, just before going back to Pennsylvania. He had a little shop in the little village of Laceyville, just by the rushing Susquehanna River. He was a very dexterous machinist and so kind-hearted that he could never deny his friends anything. I remember that, when I was there, the village blacksmith disturbed us because he wanted him to do a little job that no one else in the town could do, for no one else had a steel lathe. I ridiculed the idea of his letting his neighbors disturb him from such exact work as the making of foundation rolls; but he said: "I can't refuse my neighbors, and besides, each of those men would go into the fire if I needed help. I must treat them as they would treat me." He cared so little for money that he never sent us a bill for any of the dozens of mills that he made for us. We would send him a remittance and ask him for a statement, but his reply invariably was: "I am overpaid. You don't owe me anything." He was the man who said to me at one time: "What a great country our America would be, if it were not for the love of the almighty dollar!"

Well, what with one manufacturer and another, progress came. But there were quite a number of makers of inferior machines. Some men manufactured presses, in which a sheet of wax was inserted and placed under pressure, to make the rudiments of the cells. Both Heddon and Dr. Miller thought they preferred the work of the press to that of the mill. The work of the press was softer, without doubt, but so very inferior! The principal maker of those presses was D. S. Given, of Hoopeston, Illinois, who also made his machine in the early eighties. But he could never furnish us a decent sample of the work. Heddon would write us: "I prefer foundation made on the press, but as I can't make it, I have to order from you." We had a press, but could not use it.

In Europe they were making still less elaborate machines for foundation. The Rietsche press was one of them and many imitated the press by using plaster casts. A right handy machinist could make sheets with a fair imprint of the cells of workers, with those presses or casts, but nothing that could be offered to the public.

Another invention was the flat bottom foundation, patented. The main advantages of this make were that it could be wired and sold ready with the wires. It could also be made exceedingly thin, for it was made on smooth rolls, with just the print of the cell walls. I thought at one time that it might get the bulk of the trade, although my trials of it had been unsatisfactory. It was very thoroughly advertised. I never went to a beekeepers' convention at that time without meeting our old friend, the maker of flat bottom goods, standing by a pile of the prettiest, most regular flat-bottom foundation that could be imagined. Finally, one day, I noticed in the American Bee Journal, the advertisement by the Newmans, at Chicago, of flat-bottom extra thin foundation at ten cents below the normal price. Much worried at this unreasonable cut, I wrote at once to Thos. G. Newman, asking why this cut. His reply was: "We have had a large amount of flat-bottom foundation on hand for a long time. There is no demand for it and we are trying to get rid of it by cutting the price. But it is not bringing any returns. We don't want to handle it any longer."

While I was working and worrying over foundation mills, my father was practicing on purifying beeswax. He certainly succeeded. Our sales, which began in 1878, with 500 pounds, reached 2,000 pounds, then 3,000, 8,000, 24,000, then jumped to 59,000 a year, to fall back again to 26,000 in an unfavorable season.

I have told about making comb foundation on different machines. But this was all work done by hand. The sheets were made by dipping smooth, wet boards in the hot wax several times, just as our grandmothers used to dip candles; then peeling off a sheet from each side of the boards. These were allowed to cool and harden for a few days, then run on the mills, turned by hand power.

In 1892 or 1893, a man who spent his life making all sorts of inventions, Mr. E. B. Weed, attempted to devise a method of making endless sheets, to be run like paper in a paper mill. He wrote us from a

town in New York State that he was perfecting a process of this kind and would like to sell it to us. But, like nearly all inventors, he was penniless. We must send him money enough for him to come to us, bringing to us his machine, to show us what he could do. He would guarantee making not less than 200 pounds per day, with his machine, of as good quality as the best we ever made, and with only one man to supervise the work.

We sent him the money; he came. But when his machine arrived after two weeks of delays, it was a disappointment. The machine, resembling a sausage filler, could do but little work at sheeting, and it required refilling so often that it made irregular work. He and I, working together, as laboriously as possible, did not succeed in making 20 pounds of foundation per day. As we had no machine shop, we could not help him to improve his machinery. He had good ideas and we could see it. He was much worried and we pitied him, for he seemed to be at the "end of his string."

Although the venture was only a disappointment and money thrown away, we felt willing to do what we could. We supplied him with funds enough amply to go back home and make some more experiments. He was so pleased with our willingness to help him through, that he voluntarily promised us that, if he ever succeeded in making machines that proved practical, he would give us a chance to use them.

We gave the matter no further thought, but two or three years after, we heard from him at Medina, Ohio, with a telegram informing us that he had at last succeeded in manufacturing endless sheets of wax and that, if we wanted a share in the invention, we should come at once to the A. I. Root factory. I went and found that he had indeed succeeded in his undertaking and had passed a contract with the Root people to put his invention to use, retaining for us the right to manufacture under a royalty.

That is how it happened that the Root people and the Dadants were at first the only ones to manufacture what has been called the "Weed Process'" foundation. Improvements in that process have been made from time to time since. But our share in it was entirely due to the grateful disposition and feelings of Mr. Weed. "Cast thy bread upon the waters for thou shalt find it after many days." We certainly had had no prevision of what happened. Mr. Weed remained our good friend as long as he lived.

Endless improvements have been devised since, deep cell foundation, metal base foundation and finally metal combs. All are more or less successful. But the amount of capital required at the beginning, which comprised a mill, a few wax pans and cans and a few thin boards, has been increased until thousands of dollars are invested in the business. In the old days, when we had five thousand pounds of beeswax on hand, we had enough to run several months. Now, five thousand pounds of beeswax may be run through our machinery and turned into foundation in two days. The last improvement, wired foundation, was devised and patented by my son, Henry. It would not be patentable did it not contain improvements never before devised.

The man who has not had to take care of bees, before the invention of as careful a guide as comb foundation has no idea of the difficulties which were encountered by the early users of the movable frames. Perhaps that was one of the reasons why so many people clung to the straw skep and the old gum. In order to secure straight combs, one had to glue a guide on the underside of the top bar of each frame, or at least have frames made with a bevel on the underside, which the bees followed more or less accurately. But the combs were always wavy and when handling the bees, we were in the necessity of placing them back into the hive in the same position as we had found them, so the combs would not rub against each other in the wavy places. Similarly, it was quite a task to secure worker combs to the exclusion of drone combs. All this is past history, for no one needs have much drone comb in hives unless he is careless.

Since the above was written, an Italian beekeeper, Antonio Bonaldi, devised a machine to manufacture a whole comb. He sent us a sample comb, full depth, of the Dadant super size. There are two objections to this magnificent invention. The comb has to be made too heavy, for it could not be produced as light as the bees make it. The one we received weighed over a pound, or about seven times as much as the natural comb. The other objection would be transportation without damaging such full combs. It would be impossible, or exceedingly expensive.

Change to Larger Hives

By P. Petersen.

WHEN reading the Bee Journals or traveling one cannot help noticing that there is a strong tendency to use larger hives and frames. From present appearances I am convinced that the standard hive of the future for the production of extracted honey (and perhaps for comb honey too) will have not less than 10 or 11 large frames, and perhaps more, as we get better queens.

I know that fairly good crops of honey may be produced in 8-frame Langstroth hives, because I have bought several small apiaries of such and used them for several years, but they require a lot of work in the spring when the beekeeper, and especially the farmer-beekeeper, is busy and they must be Demareed at the beginning of the honeyflow or gone through once every 10 days to prevent swarming. I do not like unnecessary work, so I have been looking for an easy way of changing to the larger hive and I believe that I have found such a way.

Of course, I might have set the 8-frame on top of the Dadant hive and put a Langstroth frame of brood down to start the bees to building below, but the 8-frame does not fit well, neither does the Dadant cover on the 8-frame Langstroth hive. So I ordered 100 Modified Dadant frames and enough wired foundation to fill them, and nailed a 2¼-inch rim on the lower edge of a dozen of my 8-frame hives. This rim is easily made. One half depth super sawed through with a rip-saw will just make two rims, and such a hive will hold 7 Dadant and 1 Langstroth frame when completed.

I had them ready by June 1st, and used them in Demareeing my strongest colonies of Italians and Carniolans.

First I would place such a deep 8-frame hive body on the bottom board, place a Langstroth frame with unsealed brood, young bees and the queen in the center and fill out with 7 Dadant frames, then a queen excluder on top and above that a super of drawn comb and the old brood nest on top of that.

Later empty supers were added when the bees needed more room, and the Langstroth frame below was replaced by a Dadant or moved to one side. The plan has worked well so far. Each of those colonies has drawn out the foundation in the 7 or 8 large frames below and has honey enough to winter well, and I have extracted 120 to 175 pounds of clover honey from each.

Next spring, when the bees have filled the 7 or 8 frames with brood, I expect to lift them out and place them in a Modified Dadant hive, fill out with frames of foundation and the transfer will be completed. Then I will get the deep 8-frame hives ready for transferring some more colonies in June. In this way they can be used over and over until all are transferred, and our old 8-frame equipment is used up. Such a deep 8-frame hive has the same capacity as a 10-frame Langstroth hive and I believe it is a good deal better for wintering. I must add that the work has been done with strong colonies in a good season, but with good queens I would try it any ordinary year.

Iowa.

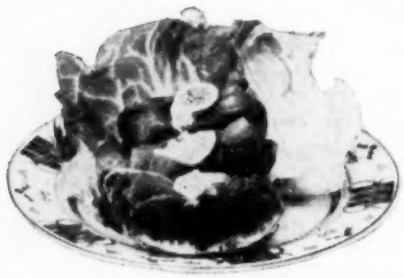
Miss Fischer (in center) and four earnest helpers who are putting honey into the minds and stomachs of hundreds of people in Madison, Wisconsin.

Eat the Honey Way at the Honey Tea Room

"The Flavor of Flowers In Your Food"

By H. F. Wilson.

MISS MALITTA FISCHER, former Secretary of the Wisconsin State Beekeepers' Association, is using the above slogan for a new venture which she has undertaken at Madison, Wisconsin. Perhaps "A Thousand Ways to Use Honey" might also be the title of this story, for Miss Fischer is developing new dishes every day. In fact, new dishes follow one another in such rapid succession that hardly any two menu cards ever look alike. She has developed everything from cocktails to desserts with Honey Combinations, and it is possible that before she gets through she will have chewing gum, cigars and cigarettes flavored with honey.

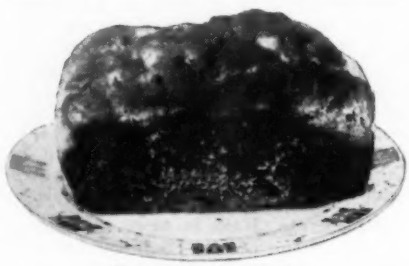


In this series of pictures some notion can be obtained of the honey foods that have been developed successfully in the Honey Tea Room. Above is a tasty dish of honey, orange and pineapple salad.

Honey is used to develop the flavor in every dish of food served at the Honey Tea Room, but so delicately that the flavor is often times enticingly mystifying. Those who are unable to eat honey, "so they say," come as unbelievers and go away enthusiastic supporters of the idea.

Starting with nothing but the moral support of her friends and the courage and enthusiasm of youth, Miss Fischer started out in May, 1924, to make a practical experiment with honey and the public. The Honey Tea Room is now well known in Madison and people come from all parts of the city to eat the "Honey Way" when they want something especially nice.

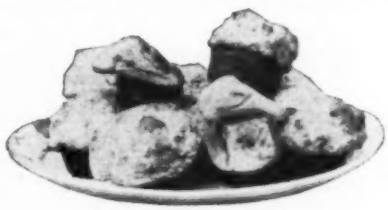
Miss Fischer's kitchen is a food laboratory, and she is conducting as good a piece of practical research on honey as a food as can possibly be undertaken. If the results of her work can be assembled in bulletin or book form, it will be a valuable contribution to the use of honey in food.



Honey-orange bread.

She is studying this problem from two angles: First, the possible use of honey in baking, and for flavoring uncooked foods; second, the reaction of the public to honey propaganda. The results of the first phase of her task show that there are unlimited ways in which honey can be used for simple and pleasing dishes. The observations upon the second phase show that it is possible to educate people in the use of honey so that they look forward to having their food flavored with it at each meal, and Miss Fischer reports that some of her regular student customers will ask for two servings of honey in place of one of butter and one of honey.

Imagine sitting down to eat and finding that every dish, including entree, soup, fish, meat, salad, dessert and tea have been flavored with honey. (It makes an interesting meal, indeed). For instance, you may have a Honey Apricot Compote, a Honey Fruit Canape or a Honey Fruit Cocktail; then you can have a soup a la honey. For meats you may have ham flavored with honey, fish or steak brushed with honey and browned to taste; then a salad, one of a dozen, all with some honey combination. Honey California Cherry Salad is a good one. Your bread may be Honey Orange Nut Bread, Honey Tea Muffins, Honey Date Muffins or Honey Prune Miffins. In puddings there is a choice of a dozen, Honey Cherry Pudding and Honey Chocolate Custard being



Honey-orange muffins.

Exterior of the Honey Tea Room, Madison, Wisconsin. 2,723 people ate honey-way food here in March, a fairly representative month. Madison is the seat of the University of Wisconsin, so the honey-way idea will spread out rapidly from such a center.

among the most popular. If you prefer pie, Honey Cherry Pie or Honey Fudge Pie will do. Many prefer Honey Fudge Cake with a Honeyscotch Sundae or Parfait. Honey Nut Brownies or Honey Date Strips may also be called for. The latest addition is Buckwheat Honey Malted Milk—and it's fast becoming popular, too!

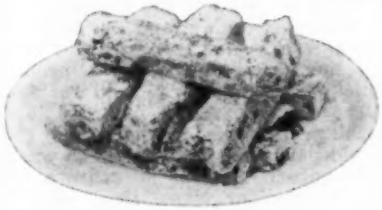
As for candy, Miss Fischer has undoubtedly developed the best honey candies yet sold to the public, for she has succeeded in working out the right combinations of dipping chocolates for a number of candy centers, which require extreme care in developing the right amount of honey for flavoring.

All of these things are by no means perfect, and much still remains to be done to get recipes for every-day use that are simple and easily made. Here are a few excellent recipes:

Honey Fruit Canape

(Delightful for afternoon teas or may be used as a first course to vary bridge luncheon menus).

Soften one-half cupful of butter; blend with three tablespoonfuls of HONEY. Add two tablespoonfuls of finely chopped crystallized ginger, one-fourth cupful each of finely chopped dates and finely chopped walnut meats. Be sure that the mixture is thoroughly blended. Spread on rounds of thinly sliced graham bread or squares of honey orange nut bread.



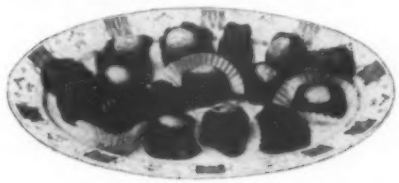
Honey-nut brownies.

Honey, Banana and Nut Salad

Take a medium sized banana and peel, lay on salad plate properly garnished with lettuce. Take a grapefruit knife and dig a small groove down the center of the banana. Scrape out enough banana to form a channel about one-sixteenth of an inch deep. Fill this cavity with honey and in the honey drop little pieces of walnuts. Drop a little HONEY Mayonnaise across the banana in the center and decorate with a piece of cherry. The honey improves the insipid flavor of the banana, also giving it a very distinctive and satisfying flavor.

Honey California Cherry Salad

Pit large California cherries. To one package of Philadelphia cream cheese add one tablespoonful of honey; mix thoroughly. Fill cherry centers with this cream cheese and honey mixture. Arrange five of these stuffed cherries on a bed of lettuce. Garnish with fresh strawberries that have been rolled in honey. Allow to remain in refrigerator about a half hour in order to properly chill before serving. Place three little hills of whipped cream about the cherries, drizzle a bit of honey over cherries and whipped cream. A dash of paprika on the little heaps of whipped cream increases the effectiveness of the color scheme of this salad.



Four different kinds of honey candies are shown on this plate.

Honey Cherry Pudding

1 tablespoonful Crisco.
1 egg.
1 cup HONEY.
½ cup cherries (sour).
¾ cup milk.
2 teaspoonfuls baking powder.
2 cups flour.

Honey candies, one and two-pound boxes.

Blend Crisco or shortening and honey together. Beat egg thoroughly and add to blended honey and shortening; then milk. then ½ cup cherries (drained), then flour in which baking powder has been sifted. Bake in flat cake tin. This cake should be about an inch high. Serve hot with the following honey cherry sauce:

Honey Cherry Sauce

1 cup cherry juice.
3 tablespoonfuls flour.
2 cups boiling water.
1-3 cup cherries.
2 tablespoonfuls butter.
1 cup HONEY.

Mix butter and flour. Pour over this two cups boiling water. Blend thoroughly. Add cherry juice and cherries, stirring continuously while over flame. When completely mixed

remove from fire, add the honey and serve over the honey cherry cake (given above).

Honey Nut Brownies

2 eggs.
½ cup honey.
2 ounces chocolate.
¼ cup butter.
½ cup sugar.
½ cup flour (sifted with ¼ teaspoonful baking powder).

Butter and chocolate should be melted together, then add honey, then flour and baking powder, then nuts. Bake 45 minutes in a slow oven. For immediate use it is better to use ½ sugar and ½ HONEY. Cut in strips about ½ inch wide and 3 inches long.

To pack away in a jar, use all honey instead of part sugar, and do not use until after two weeks. Roll strips in powdered sugar before serving.

Honey Date Strips

3 eggs well beaten.
1 cup HONEY.
1 1-3 cups flour.
1 teaspoonful baking powder.
1 teaspoonful vanilla.
1 cup chopped nuts.
1 pound chopped dates.

Mix honey and well-beaten eggs. Add baking powder and flour sifted together, then chopped dates and nuts. Bake in long, flat tin; mixture should not be more than ¼-inch high. When baked will be about ½ inch high. Cut in strips ½ inch wide and 3 inches long. Pack away in crock; roll in powdered sugar before serving.

OUR FIRST BIRTHDAY—MAY 29

Music at Noon

MENU FOR THE DAY

DINNER

"Flavor of Flowers in Your Food."

$1.00

Vegetable Soup Wafers
Honey Brushed Steak
Hashed Brown Potatoes
Hot Honey Shredded Wheat Muffins
Honey
Tomato Salad Mayonnaise
Honey Marshmallow Walnut Sundae
Coffee Tea Milk

75c

Vegetable Soup
Wafers
Rolled Roast Rib of Beef
Hashed Brown Potatoes
Hot Honey Shredded Wheat Muffins
Honey
Buttered Peas
Cabbage and Nut Salad
Mayonnaise
Honey Rhubarb Short Cake with Whipped Cream
Honey Lemon Meringue Pie
Honey Fudge Cake
Coffee Tea Milk

50c

Choice I
Italian Chop Suey

Choice II
Vegetable Soup
Minced Ham, Lettuce and Mayonnaise Sandwich

Choice III
Scalloped Potatoes with Diced Roast Pork
Hot Honey Muffins
Honey, Banana and Nut Salad
Honey Fudge Cake or Lemon Meringue Pie
Rhubarb Short Cake
Coffee Tea Milk

35c

Chili Con Carne
Hot Honey Muffins Honey
Honey Fudge Cake
Coffee or Milk

Specials

Club House Sandwich	50c
Chicken Sandwich	30c
Vegetable Soup	10c
Buttered Peas	10c
Italian Chop Suey	20c

Honey Tea Room Service

Breakfast	7:00 to 9:30
Luncheon	11:30 to 2:00
Dinner	5:30 to 7:30

A la Carte, 7:00 a. m. to 11:00 p. m.
Friday and Saturday evenings until 1:00.
Refreshments and Honey Way Tea 2:00 to 5:00.
Special Catering Service

The Honey Marketing Problem

By Geo. W. Pillman.

I HAVE noted during the several years past, that the question has many times been asked the editors of bee journals regarding the use of, or finding a sale for, honeydew. Many suggestions have been offered, such as selling it to bakeries, tobacconists, or reserving it for spring feeding to stimulate brood rearing. From my point of view, any one or all of the suggestions mentioned are more or less objectionable in that it is generally conceded among beekeepers that honeydew is unfit for human use, and the objection might apply whether it is used in tobacco, or for baking purposes. Of course, the reason behind the objection of honeydew for food purposes is the source from which it is procured. Looking at the matter from a chemical point of view, in which the average person is not versed, honeydew may, or may not be as wholesome as the honey made of the nectar secreted by the flowers. Speaking for myself, I confess that I do not relish the flavor. Yet perhaps, the knowledge of the facts in the matter may have something to do with my being unable to find it palatable.

As to using honeydew for spring feeding, for my part, I am always only too glad to get a crop of it out of my combs without thinking of putting any of it back on the hives the season following, with the chance of getting some of the holdover mixed with a crop of pure honey.

My location is such that about one year out of four or five I find myself the owner of a large crop of honeydew, with no buyers scrambling over one another to relieve me of the worry of disposing of it. What to do with the stuff after the bees have brought it to the hives? Following some of the advice given in back numbers of bee journals—and which is no longer given—I have somehow managed to find a sale for it. However, since learning something more of the source and properties of this cloudy looking sweet, I would have some misgivings in offering to sell any more of it to the bakeries for, endeavoring to live by the refined principles of the Golden Rule, I do not feel free to sell to others that which I would consider unfit to eat myself.

There is, however, one very valuable use for honeydew, and that is in comb building. For instance, if one is planning to increase the size of his apiary, or is in need of drawn combs for extracting, I know of no better way to take advantage of a crop of honeydew than by getting busy at the beginning of the flow and supplying the bees with supers containing frames of foundation and letting them use up the surplus by building it into combs.

The combs when partly drawn out, may be taken away and more frames of foundation given, and the procedure may be continued until the end of the flow. By taking this advantage of the occasional honeydew year, hundreds of fine new combs may be added to one's equipment, and those seasons which are normally considered failures could be made to show a profit.

So far as I am able to observe, combs built on wax foundation, during a flow from honeydew, are just as good as combs built during a flow of the finest honey; and the labors of the bees are thus conserved by making the very best use of a product which ought not to be sold for food purposes; that would bring little or nothing on the market; and that would perhaps otherwise go to waste.

I venture to offer herewith a few suggestions for what they may be worth. In thinking of the several

things in which honeydew might be used, it occurs to me that a new market might be evolved by using it as an ingredient in some of the commercial stock food mixtures. At a price ranging from 4c to 6c per pound—which would seem better than letting it go to waste—it might also be used as a partial food for fattening hogs. As honeydew is perhaps almost as rich in the element of sugar as honey itself, some experiments conducted along these lines would be suggestive of its value.

As tons of honeydew must be produced in occasional seasons in certain wooded sections of the United States, it would seem timely that some of the official members of the beekeeping fraternity look around to see if some chemical use might not be found for the hundreds of tons of this product which I surmise go to waste annually. As science has found a use for, and turned to profit many other kinds of previously considered worthless products, it seems reasonable to assume that it might also find some other uses for this sugar product of the bees. Much sugar is used in the products of chemistry, might not honeydew in some instances be used as a substitute? A proper use and general market for honeydew would certainly be welcome news and mean much in the matter of dollars and cents to the beekeepers residing throughout the United States.

Missouri.

(Our correspondent's suggestions are good. However, when this is fed to bees for comb building, much of it will be put by the bees in the cells as they complete them and will need to be extracted again. Perhaps feeding it for comb building early in the season, when bees consume a great deal of honey in brood food, would cause a greater consumption, as it would be used for both purposes.

Our own sales of honeydew, at one time amounting to 30 fifty-gallon barrels, were for chewing-tobacco. We dislike the idea of its source, yet it is produced by an insect, just as honey is, but by a different process, and is originally gathered from the sap of the nectar. If we look into the production of some of our nicest dishes, oysters for instance, we will acknowledge that there is much prejudice in our likes and dislikes.—Editor).

Convenient Queen Introducer

By G. C. Greiner.

SOME twenty years ago, when I started experimenting with artificial divisions as a means of controlling natural swarming, I tried to raise my own queens and introduce them by the nucleus method, which I found now and then described in our bee magazines. An article on this subject appeared again in the May number of 1924 of the American Bee Journal, but in my estimation all were alike faulty; not practical as a business proposition. It required too many fixings and too much fussing. And where should we get so many combs of hatching brood? As an experiment with one or two queens this nucleus method may give the operator some satisfaction, but to introduce them by the dozens, fifties or hundreds, it is too lengthy and troublesome.

But the most erroneous idea is expressed in the above May article. The writer says: "While a little fussy, it requires no special cages or fixtures and has the advantage of giving you the use of the queen at once." What are we to understand by "the use of the queen at once?" The benefit of a new queen to the beekeeper begins from the time when she becomes a "laying" queen; before this she is no better than a drone. It will be many weeks before that new queen, turned loose in her solitude on the bottom of a cold hive with nothing but a comb of hatching brood above her becomes a laying queen. She has to have young bees to prepare cells for laying and incoming bees loaded with nectar to stimulate her to her maternal activities; without these environments she will not lay many eggs.

To get my queens early enough for my artificial divisions, I had to get them from the South, ordering as many in early spring as the prospective wintering would suggest, but making it a point to order one or two more than I would actually need, in case of an emergency if one or the other of my introduced queens should fail to be accepted. These

Greiner queen-introducing device.

extra queens I placed for safe keeping in any good colony until wanted. It happened some eight or ten years ago that I had placed one of these spare queens in one of my hives and for the time being had paid no attention to her. But on my usual rounds, seeing to the needs of the newly introduced as well as the old queens, I passed that hive and feeling quite anxious about that confined queen, opened the hive very carefully. I found her running back and forth in her cage trying to find a way to freedom, as I supposed.

As I had no particular use for that queen at that time, and feeling somewhat sorry for the poor little thing being confined so long, I decided, as an experiment, to grant her her liberty for a short time. But knowing that the two queens would enter into deadly combat whenever they met, I caged the old one before letting out the new. I closed the hive with some fear and trembling, for I expected the bees would kill the intruder and drag her out of the hive. I watched the alighting board quite closely for a number of days, but never found her.

When I made my next examination, allowing time enough, perhaps a week, for all the eggs of the old queen to hatch and the new one to begin laying, I found the latter in seemingly fine condition and eggs in the hive, also. The result of my experiment so animated me that I decided to test the matter to a finish. I kept the two queens in that hive all summer, changing every now and then from one to the other, always with the same result.

While I was making these observations, it appeared to me that if I could apply this principle in a short, convenient way to the introduction of my queens when making my spring divisions, 100 per cent of safe acceptance could be easily attained. Ever since then, planning and studying up a device that would embody the principle of two queens in a hive and allow doing all the queen manipulations in a handy, convenient way, has been in my mind more or less all the time, but for various reasons I delayed to let that plan materialize until this last summer.

In the meantime I continued to introduce my queens in the old, customary way of suspending them in their mailing cages among the combs at the time the divisions were made. But the mailing cage, as sent out by our queen breeders, is a most unhandy tool for this purpose. All the combs have to be crowded together to give a space large enough to admit the mailing cage and allow some spare room for the bees to travel around it. This is the case with a full hive. After the division is made and two combs are taken out, it is a little easier to arrange a suitable space for the suspension of the new queen by leaving out one of the division boards, or fillers, as they are sometimes called. But in either case the combs have to be disarranged, moved from their proper place and rearranged when the cage is taken out, which greatly disturbs the bees and is a time-wasting annoyance to the operator. Besides, it frequently happens that the cage swings with its screen or face side against the comb, where the bees attach to it by little brace-combs. Thus it defeats the object for which it is intended, of giving the bees a chance to come in contact with the queen, feeding her through the screen, etc., as a means of getting acquainted with her.

To overcome the unpleasant features of that cage I have, during a decade or more, used the home-

made cage, made of common window screen, almost entirely for all of my queen manipulations. It is so much handier than the other; it can be squeezed between the top bars of the frames without moving them or changing the arrangement of the hive to any great extent, all of which are a source of unnecessarily disturbing the bees. And as a queen catcher it works to perfection. Many times have I caught queens on combs taken from the hives, holding the comb with one hand and placing the open end of the cage over the queen right against the comb with the other, she is your prisoner by clapping the forefinger over the opening when she runs up towards the other end of the cage.

I also have caught many queens on the closely trimmed bee lawn in a similar way, when doing a fake hiving. It happens almost every season that a few swarms, generally second or superseding, issue in my absence. If I wish to ascertain which hive had produced them I simply shake them first into a bushel basket and then spread them thinly on the ground in front of a hive kept for that purpose. Nine times out of ten the queen will come in sight before she reaches the hive. She can then be easily made to enter the cage, the same as on the comb.

There is only one instance when the mailing cage gives satisfactory service. When transferring package bees from their shipping cage to the hive and the queen is pulled out of the large cage, it is of some importance that she be suspended among the frames and the hive closed as soon as possible. The quicker this is accomplished the fewer bees will have a chance to take wing and be lost. There is plenty of room for the cage between the empty combs or foundation, as the case may be, and the short time it is to remain there is of less consequence than in a full hive, with combs all matched in and spaces crowded with bees.

Much more could be said along these lines, and the reason I have compared the two cages somewhat in detail is because one of them forms the principal part of my new introducing device. Following is a brief description of the same:

As the accompanying photo suggests, it represents the inner cover of a common hive. It has near its center an oblong opening of about 5x1½ inches, with an extension at one end of 1½x1 inch, forming two projecting corners to keep the queen cage from sliding endways. The unoccupied space at the end of the cage is for the free use of the hive of bees and admits them to the candy when the little stopper is removed; but in case she is to be liberated at once the plug is taken out. Two little strips of tin are tacked on the underside of the hive cover, one on each side of the opening, projecting ¼ inch, the length of the cage, to keep the latter from dropping through onto the main frames. On the upper side is a little swing cover that admits, when swung around, of reaching the queen for any manipulation, without being obliged to open the hive proper and greatly disturbing the bees.

The cage here used is of the homemade pattern, made of common window screen; it is so simple in construction it needs no direction. Only one or two points should be mentioned. The adjustable plug should have lengthwise through its center a hole of about five-sixteenths inch, to be filled with bee candy, in case it should be desired to let the bees liberate the queen. It may also serve as feed if the outside bees fail to feed her. Another point should not be overlooked. In making these screen cages the open end of the cage should be taken from the selvage side of the screen and all the locked ends of the wires on the side of the cage should be on the outside, to prevent possible injury to the queen by the sharp ends of the wires. New York.

(The apparent disagreement between this article and the one published in our May number of 1924 is probably due to the difference in latitude of the two writers. In northern New York it is much more difficult to sustain a queen with hatching brood than it is in the South.—Editor.)

Bees In Ancient Mythology

By H. Durkopp Linnet.
Translated by J. Skovbo.

Ever since ancient times until the present day, bees have interested men and engaged their thoughts. That the ancient people should have been interested in bees is in itself natural, because it was from these small insects that they received their only sweetness, namely honey; as it was only later that men learned to obtain sugar from plants. Sugar canes are, for instance, first mentioned in the 6th century A. D., and sugar beets in the 19th century. But nowhere is this human interest for bees better expressed than in mythology. To relate all references made to bees in mythology alone would be impossible in a paper of this kind, and I shall only mention some examples from different countries.

In India, one of the countries where culture has longest existed, we find proof of interest in bees. The Indian name for bee is "madhucara," the maker of honey. It is mentioned in the old Indian lays and songs, and also in the old law codes, but mostly in the mythology. The Indian sungod, Vishnu, the supporter of the universe, is pictured as a blue bee in a lotus flower, and it is said of him that honey flows where he puts his foot. The Indian love god, "Kama," carries, like the Greek Eros, and the Roman Amor, a bow, the string of which is a chain of bees, a symbol of the sweet pains caused by the arrow of love. Bees preceded Kama as messengers of love.

According to the Persians, the bees rest on the lips of Mithias, divinity of truth and faith. He recognized the liar at once, punishing him with stings; therefore parents would threaten their children with the bees as a warning against lying.

The Arabian name for bee is "Nahlat," meaning "the gift of the gods." It is particularly mentioned by the two Arabian poets, Hafis and Sadi. Hafis is said to be the author of the proverbs "no roses without thorns" and "no honey without stings." Sadi writes among other other things: "Many bees can prostrate the elephant, although he is called strong and mighty." The Moslem Bible, the Koran, speaks of honey as a medicine; it says: "The medicine of the physician is bitter; the medicine of God is sweet—it is honey—in it is healing for the people." Mohammed is quoted as saying: "Honey is healing for every bodily disease, and the Koran is healing for every disease of the soul; therefore I recommend to you both of these for healing—the Koran and honey." The sixteenth commandment of the Koran also concerns bees; it dates from the seventh century A. D. and reads as follows: "The Eternal and All-merciful One also took notice of the bees, and He said to them: 'Build your homes in mountain cliffs and in the trees of the forest with an art like unto that used by men. Fly out to all the flowers and fruits which the Lord has shown you; from their life comes the priceless honey; differing in color and taste, but a true means of healing for man. Verily, also in them there is a sign for thoughtful men."

From Arabia we will turn to Egypt. Here is found proof that bee culture was practiced at a very early date. The type of hives used in Egypt today has been used there for several thousand years. The honey was extensively used as medicine for all kinds of diseases, while wax was used in connection with the embalming of the dead, and also for the coating of writing tablets.

The Egyptians had some remarkable ideas about the bees which they called "ab-en-ebio," meaning honey fly. They believed that the bees originated from the carcasses of bulls, and the queen, which for lack of better knowledge they called the king, they believed was formed from the noblest part of the animal body, the brains. While this fable was spread to many other people, it undoubtedly originated in Egypt and from there found its way to Greece and Rome, where it is mentioned by many old writers, among others Ovid, Plutarch, Virgil and Varro. While in Africa I will mention the Zulu negroes, who compare numbers or multitudes with bees. They will, for

instance, say to a man who has many cattle: "The number of your cattle is like a bee swarm," or "The number of your cattle is like the bee comb."

Turning to Europe we find bees mentioned by the oldest civilized people here, the Greeks. Beekeeping even enjoyed a high development, and it is here we find the first observer of the bee itself, Aristotle, the friend and instructor of Alexander the Great, living in the fourth century B. C., and known as "the father of zoology." He collected all that was known at that time about the animals and their life, and was himself a close observer of nature. Aristotle in his first books devotes considerable attention to bees; he was aware of the existence of the three classes of bees—the queen, drone and worker. He likewise describes the interior of a beehive; the different cells, young bees, guards, etc., and gives directions about catching a swarm. He mentions bee diseases, and enemies of bees, such as waxmoths, bee birds, and yellow-jackets. Aristotle was therefore undoubtedly the leading light of his time in apiculture. Other Greek authors who mention bees are Homer, Hesiod, Xenophon, Plutarch and Solon. In the Greek mythology the bee was consecrated to the goddess "Artemis," and the priestess of Artemis was named "Melissen," from "Melissa," the Greek name for bee, to denote their holiness, cleanliness and intelligence, and the blessing derived from them. Furthermore, Zeus and Bacchus were supposed to have been raised on honey.

In Italy, or Rome, as it was then known, bee culture also was rated high. Every patrician kept in his garden a number of beehives and, as a rule, had a special slave to attend to them. Honey was much in demand as an article of commerce among the Romans, and in the homes of the rich it was never lacking at the tables. Wax also was used for many purposes such as for salves and for cosmetics. Of the Romans, Varro and Virgil especially interested themselves in bees and Varro writes: "Nothing is so sweet as honey, the work of the bees; it is a gift for Gods and men." Virgil wrote an entire book in verse concerning all that was known concerning bees and bee culture; this book is today translated and printed in the English, French and German languages, and is very interesting. Other Roman authors also mention bees, such as Pliny the Elder, Cicero and Aelian. To the agrarian Romans the bee was so important that they invented a special goddess, Mellona, as protectress of the bees; these were, however, also consecrated to Apollo, and it was claimed that Aristaeus, a son of Apollo, was raised by nymphs, and by them was instructed in bee culture.

In northern Europe we have the old Vikings who gladly engaged in battle; knowing that in Valhalla the mead awaited those who received the heroic death. And the Saga relates how in Valhalla, at the table of Wotan, the father of heroes, the selected warriors received from the Valkyrs the meadhorn containing the divine drink. The Edda writings also relate how Wotan, or Odin, as he also was called, gained much wisdom by drinking the mead.

Outdoor Wintering North of Fifty-Five

By W. D. Albright.

AS the article, "Beekeeping in the Peace River Country," published in your May issue seemed to excite surprise that bees could be successfully kept so far north, readers may be interested in the outcome of wintering attempts by ourselves and other tyros.

Two beginners with whom we are in touch wintered successfully outdoors, braving a season which registered 41 degrees below zero at the Station and a good many degrees colder on lower levels. One, after bringing his colony through in good condition, got them wet while moving to avoid inundation, losing his queen and most of the workers in consequence. The remnant we united with one of our colonies. The other adventurer was an 11-year-old lad named Iden C. Stanley, whose father helps him with the bees. They live on the south shore of Lesser Slave Lake and write that their two colonies came through the winter, one with nearly half loss and the other with no perceptible reduction, although both had dysentery. "They were wintered," says Mr. Stanley, "in a packing case out of doors. One bee was seen with pollen on April 21st and again on the 23rd, but this was not general until about ten or twelve days later. They are extremely busy at this date."

At High Prairie, west of Lesser Slave Lake, is a lady who for several years has been beekeeping in a very small way, Mrs. James Binnie. Under date of May 10th we heard from her as follows:

"Our bees went into the cellar in good condition, two 10 and one 8-frame hives. We brought them up on the 20th of April. On examining them we found that the queen had disappeared from the 8-frame hive, so I united it with one of the 10-frame hives. Both 10-frame hives had eggs, unsealed brood and sealed brood when they were brought up from the cellar. There is lots of pussy willow pollen and the bees are working fine. I looked at them today and they have lots of worker brood and a very little drone brood in each hive. I put honey supers on both hives and put empty frames in the brood chamber."

Another beginner wrote thus on May 12th:

"I had a single colony of bees which seemed to have wintered well. I put them out on May 3rd and examined them on May 10th. They seemed to have lots of honey, some of it very dark. I noticed some grubs and capped brood but could not see any eggs or find the queen, but the bees were piled so thick on the combs that I probably missed her. I may state the bees were out last fall until after the first cold snap, when it was 20 to 25 degrees below zero here."

The Experimental Station cellar wintered four colonies. The strongest we had reason to believe was queenless in the autumn, owing probably to lack of skill in introduction after dequeening. It wintered well in a double brood chamber but had to be united in the spring. One weak colony perished, with some symptoms of dysentery. Two came through fairly well, and being reinforced by union of the two parts of the queenless colony were thus made very strong. They were put outside on April 28th, having already a little capped worker brood. Working on willow, anemone and many other plants, they built up rapidly and on May 29th we found in the weaker colony six frames with sealed worker brood. The stronger colony had ten frames with sealed worker brood and another comb with eggs. This had been strengthened by the union of half of our queenless colony and the remnant of our neighbor's.

Working conditions this spring have been favorable and there seems no lack of bloom on which the colonies may build up. Our best native plant for yielding surplus seems to be the fireweed, which usually blooms in the latter half of July.

Alberta.

Hermaphrodite Bees

We are in receipt of a sixteen-page pamphlet entitled, "Zwitterbienen" (Hermaphrodite Bees), written by Fritz Leuenberger and published in Berne, Switzerland.

The Bulletin has to do with a description of the characteristics of a number of these hermaphroditic specimens, over a dozen of which were obtained from a single colony, which, curiously enough, ceased furnishing specimens in either the parent stock or the new one, when the queen was transferred to a fresh nucleus for experimentation.

Of the specimens examined under the microscope, no two were alike, some had the head of a worker, and body of a drone; some carried appendages of the drone on one side and those of the queen on the other. Some of the bees varied greatly in size and shape of antennæ. Most of the "curios" had the eyes of the drone, but these also varied greatly in size.

The pamphlet contains 23 illustrations of the various parts of the bees, and the text explains the queer ways in which these were linked incongruously together to form these "freaks" in the bee family.

FOLKS WORTH WHILE

By Frank C. Pellett.

G. H. Vansell

It is a long jump from South Carolina to California, but Vansell has been a beekeeping teacher in both states. The first time the writer met him was back in the old days when Vansell was a student at the Kansas University. At that time he was spending part time in the bee inspection service. He came to the University after having kept bees at home on the Kansas farm, so was no stranger to the business of honey production. Since that time he has spent several years teaching beekeeping in the University of Kentucky where, by the way, he met the lady who is now Mrs. Vansell. When the war came on, Uncle Sam took him in charge and, instead of sending him to France, sent him to South Carolina as an extension teacher of beekeeping.

Since he settled in California the beekeepers out that way are making good use of him and have elected him to the office of Secretary of the State Association, which goes nicely with his work in the University. Our friend has not forgotten the days with the bees back on the Kansas farm and in all his work takes a very practical view of things, as witness his experiments with soapsuds and formalin in the treatment of foulbrood. Soapsuds is cheap and everywhere available, and he was looking for something of that kind to use with formalin to take the place of alcohol, which is costly and difficult to secure.

Cleaning up bee disease in a state the size of Utah is a man's size job, but Dan Hillman is a full-size man. For many years he published a newspaper at Vernal, which is 120 miles from the railroad, and at the same time managed several hundred colonies of bees. An editor has a fine chance to get acquainted with all kinds of people and learns how to get things done and keep smiling. When the Utah beemen needed an inspector to fill the vacancy caused by the resignation of Terriberry, Hillman was selected for the job.

Hillman sold his newspaper, but kept his bees, and although he is officially State Apiarist, he is also privately still a honey producer, with the assistance of a son in active charge. Hillman seems to have the idea that Utah is about the finest place in the world to live and that the Uintah Basin is the best part of Utah. This may be the natural result of publishing a newspaper in the West, where nobody but boosters live, but he is able to make a pretty good case for the country.

Hillman has an office in the Capitol building, but is so busy among the bees in his big state that he has little time to spend there except during the winter months, when the hive covers cannot very well be lifted.

Dan H. Hillman

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

GRANULATED HONEY

The latter part of August I extracted several hundred pounds of honey and immediately put it in one and two-pound bottles, after straining it twice through cloths. About two days after bottling I noticed the appearance of a streak and sometimes several streaks on the inside of the bottles that looked very much as if one had taken an artist's brush and had drawn lines with hot paraffine on the inside of the bottles. On emptying a bottle and allowing it to drain for several minutes, I took a spoon and scraped off this substance, and the reason I am writing you is that I am not convinced that it is sugared honey. The honey does appear to be a little cloudy, but not granulated. It has been kept in a warm place and should not granulate yet. When I noticed this condition I immediately called on a grocer who has bought fifteen cases of this honey, and found it in the same condition. It looks bad on the counter, as it would appear to the purchaser as if the bottles had dirty streaks on the inside. The honey was not heated before bottling, as I did not think it necessary so early in the season. I am very much puzzled and would be pleased if you could tell me the cause and a remedy for it. IOWA.

Answer.—I cannot be positive, but to me it appears as if your honey must have been harvested by the bees from at least two different blossoms, one of which granulates more readily than the other. It is quite probable that if you had heated the honey slightly and mixed it well, it would not have given you this trouble.

You say that it ought not to granulate yet. But I have been in Canada, and in Manitoba visited beekeepers who have honey that granulates within a week after it is extracted. The kind of blossoms and the climate have a great deal to do with the speed of granulation.

I would suggest that you heat that honey up to about 165 degrees and mix it up well while hot. It will probably remedy the trouble. Try it on a small quantity.

WINTERING BEES

1. I write to ask whether, when wintering bees in Modified Dadant hives out of doors, in packing cases, one brood chamber is enough for both brood and stores or whether it is necessary to put above it a second brood chamber or shallow-frame super with stores.

"The Dadant System of Beekeeping" does not make this clear, so far as I can find, and I have been made doubtful about it by reading "How to Succeed with Bees," by Atkins and Hawkins. In this book the authors emphasize the need for two hive bodies for each stock. I know they have in mind what they call the Standard hive, but I do not feel sure that I know the dimensions of the American Standard hive.

I propose to put my hives into packing cases in pairs, with 4 inches of packing below, 4 or 6 inches (I have not yet decided which) on each of the four sides, and about 9 inches above the bees. I want to make sure that the bees have every chance of wintering well, as I am convinced by all I have read, that we, in this country, do not, as a whole, give them enough protection in the winter; but I want to avoid making the cases unnecessarily large, as this would probably deter others from attempting to pack theirs at all. It will make a very material reduction in the size of the packing case if a second brood chamber is not required, but if it is desirable to include it I must, of course, do so.

The ground on which my bees are is 500 feet above sea level and rather exposed to wind, but I intend to put up a slatted windbreak to begin with and to grow a natural one as soon as possible.

2. I feel sure the size of the frame, and the increase in width of spacing are both improvements on our standard British practice; but I do not like the Hoffman frames in the brood chamber, as I find it practically impossible to manipulate them without crushing bees; and I miss the British metal ends for the top bars, as they make it so much easier to keep the bees below the top bars.

In the hope of overcoming the first of these two difficulties I am now reducing the width of the end pieces of the brood frames and using two nails as spacers, as recommended by Dr. Miller. It seems to me that this will save the lives of many bees. SCOTLAND.

Answers.—1. We never use two stories of the Dadant hive on top of one another. If you are careful to see that enough honey is stored in the brood chamber, that one story will be ample for winter and spring. If they need additional help in spring, you might give them one of the shallow supers with combs of honey.

The addition of what they now call a "food chamber" or second story for winter and spring, has been recommended lately by the comparison of the standard 8 or 10-frame Langstroth with our large hives. It is of recent origin and only as the people who use the shallow hive realized that their brood chamber was hardly sufficient.

2. I do not like the Hoffman frame principle any better than you do. It has been adopted by our people only because they find that beginners are apt to put too many or too few frames in a hive, while with the Hoffman idea only the correct number may be used. Better use the kind of spacing to which you are accustomed. It is a secondary matter.

FLORIDA HONEY PLANT QUESTIONS

(Answered by Wilmon Newell.)

1. What honey plants furnish a surplus in Florida during March? During April?
2. In what counties are these to be most plentifully found?
3. What information have you as to the reasonably expected average crop for these two months from the plants named for the months mentioned?
4. What are the qualities of these honeys as to color and marketability?

WASHINGTON, D. C.

Answers.—1. In central and south Florida a surplus is furnished by orange and grapefruit bloom in late February and during March, provided the colonies are strong enough then to store surplus. In order to secure a surplus from citrus bloom, it is necessary that the colonies be strong when the bloom commences and this, in turn, calls for careful winter attention or, in some cases, should cover feeding during January.

2. During the months of April, May and early June, Ti-ti and tupelo in west Florida, Andromeda, gallberry, palmetto, mangrove and June bloom of citrus trees in south Florida. In July, partridge pea in north and central Florida.

3. Crops vary greatly according to season and the management of the beekeeper. Yields of 50 to 200 pounds a colony from either tupelo or gallberry are not unusual and the latter figure is frequently greatly exceeded in the case of individual colonies in favorable years. We have no data on which to give average yields. It is also true that, in some seasons, owing to drought, storms or late frosts, the crop from one or more of the foregoing may be considerably curtailed or may be a failure altogether.

4. Tupelo honey. Light amber, practically ripe when gathered; mild, excellent flavor, non-granulating and much in demand as a straight table honey or for blending.

Gallberry. Light amber, flavor much like basswood honey and is considered by many as fully equal to basswood. Must be well ripened before extracted. Granulates slowly.

Palmetto: Light amber to white. Granulates readily.

Orange and grapefruit honey: Amber to light amber. In pure form has rather too much aroma, hence is best blended with very mild honeys.

Chinquapin: Dark, not a high-class table honey.

Partridge pea. Amber; quality variable. Usually a fair table honey but sometimes a little sharp in taste.

PLANTS FOR SHADE, ETC.

1. Can you tell me what I can plant that will make shade for the hives, for they are out in the sun? I would like to plant this next spring. I was thinking of trying sunflowers, and when they get about 4 or 5 feet high, cut off the top and make them branch out.
2. My hives face the south. Would you put the plant in front, or at each side? If I put two hives together will it be a good plan to run a row between them?
3. Can you tell me why the comb in a new hive melted down and fell to the floor? I used the wired foundation and it slid down the wire; if it was the heat from the sun why was it; that was the only one?

WISCONSIN.

Answers.—1. Among the annual plants for shading hives, there are two that will do, the castor bean and the sunflower. The castor bean spreads more, but the sunflower is good, and both shade the ground pretty well. Perhaps you can make the sunflower branch out by cutting off the top. I have never tried it. But if you own your home, I would advise you to plant grapevines near the hives and make a grape arbor. This would shade the hives still better and would shade you, too, when you work with them.

2. I would prefer to put the young plants on each side of the hives, or, if you put two hives close together, then put the plants between them, so you can work on the side where nothing will be in your way.

3. We used to have quite a little loss from combs breaking down in the heat, especially when the combs are new, as in your case. But we soon found out that we would have no trouble if we gave the hives plenty of ventilation, plenty of room and plenty of shade. It is the ventilation that is most needed. When the entrance is small, the bees often hang out and it happens sometimes that the cluster hangs over the entrance and prevents the ventilating bees from sending air through the hive. Then the temperature inside gets too high and the combs break down. If you will watch a colony of bees in hot weather you will see files of bees fanning at the entrance, and they fan just as much on the inside, clear through the hive and down again, so there is a constant current of air through. But if the entrance is too small and the

bees happen to clog it with a hanging cluster, then, wires or no wires, the combs will melt down and the colony is in great danger of perishing, drowned in its own honey. In your case, this must have been the only hive that thus clogged the entrance. Don't let it happen again. It is not hard to prevent. Never let your bees hang out for want of air.

LEMON GRASS

Enclosed is a letter to me from the New Jersey Experiment Station. It is apparently all the knowledge possessed by this state regarding "Lemon Grass" **(Herva cidreira)** described on page 552 of your issue for December, 1924.

I am interested in finding something to attract bees. Could you give me any help?
NEW JERSEY.

Here is the letter of the New Jersey Agricultural Experiment Station.

"It would be difficult to say just what is meant by Lemon Grass in your particular case. It probably refers to the species from which lemon grass oil is derived, namely, Cymbopogon citratus. Cymbopogon citratus, formerly called Andropogon citratus, is a member of the grass family **(Gramineae)** and is used to some extent in making lemon grass oil. Other closely related species are also grown to some extent for their essential oils. This entire lemon grass group is tropical or oriental, consequently we doubt that they could be grown in New Jersey.

"Our various New Jersey nurseries and seedsmen could no doubt supply you with such species of the mint family as are adapted to this section."

C. M. Haenseler,
Assistant Plant Pathologist.

Answer.—We can add nothing to the information given on page 552, December 1924, concerning the grass in question. The reply of the Agricultural Station of New Jersey Pathologist covers the ground as well as we can cover it. The trouble is that too many names have been used for the same plant. This "Herva cidreira" is evidently a sweet-smelling grass.

As to finding a plant of some kind to attract bees, several strong-smelling herbs have been credited with much power and in times of scarcity of honey, they do attract bees; for instance, if you use turpentine in paint, you will attract many bees, when there are no flowers for them; but I have yet to find a plant that will attract bees more than the honey-producing plants.

PURCHASING PACKAGE BEES

1. I wish to send for ten 3-lb. packages of bees in the spring, and as I have no drawn combs to put them on, would like to know if it would be possible to put them on foundation and how would they have to be handled and fed?

2: Is it best to buy them with the queens introduced or not?

3. Have two swarms, one in a box the size of an 8-frame hive, in which they have built their comb pretty much every way. The other one is in a regular 8-frame hive in which I put in one-half-inch starters. They have built lengthwise in the hive, but have crossed from one frame to another, so it is all bound together. The supers above have wired foundation with slotted bottom bars.

How can I change them without losing the brood? There is no honey in the supers above the hives. They are just beginning to draw out the comb now. Colonies were very weak this spring. When would be the best time to change them?
KANSAS.

Answers.—1. You may put package bees on foundation, but it will be necessary to feed them so as to help them build it out, if there is no honey in the field at the time you receive them. Open the cage and put the cage in the hive, so the bees may be able to get to the foundation. Release the queen as soon as possible, so she may get on the foundation. Then feed them.

2. The queen is usually in a cage, but it is their own queen and she does not need to be caged any longer. We have a little Bulletin, "Every Step With Package Bees," which will give you all the details.

3. The transferring of bees from box hives to movable-frame hives is all detailed in our Bulletin, "Every Step in Transferring Bees." It would be too bad to lose that brood. The best time to do the transferring is spring, during fruit bloom, because this is the time when they have the least amount of brood or honey. But none of the worker brood or worker comb must be lost.

GETTING BEES FROM A TREE

I have a bee tree that has the opening close to the ground; just one opening. Would it work to take a section of brood with what bees adhere to it, put a queen with them, set the hive in front of the hole in the tree, and place an escape on tree? Would the bees from the tree go to the hive? If so, what would be the result if I leave them 14 days and kill the queen in the tree with sulphur smoke and then take the bee escape off the tree? It is a tree that I had rather not cut.
MISSOURI.

Answer—In order to induce the bees coming home from the field to enter the prepared hive without much hesitancy, it would be well to make some sort of a tube and place the escape at the end of it, closing up all chances to smell the old home in the tree with clay. Otherwise they may worry a great deal trying to go back in. But the question in my mind is whether this closing up of the old tree will not smother the bees in it and cause its combs to break down. It would be much better if you could cut a hole into the tree to get at the stores.

It will take over two weeks to get all the bees from the tree. It takes 21 days for the brood to hatch, even if we suppose that the queen will stop laying when the bulk of the bees have left.

ADDING HIVE BODIES IN SEPTEMBER

A couple of years ago I bought a stand of bees from a man; this year they have not done a thing in the super, although they have the bottom well filled. I want to change the queen. As the man did not use any foundation in the brood chamber, I cannot get to the queen without breaking the combs.

How will I do to get to the queen? Can I use a hive with full foundation under the old hive and force the bees down, then put an excluder between the two and leave it that way until next spring and change my queen at that time?
IOWA.

Answer.—It is rather late in the season to expect the queen to leave her hive to go into another body to lay eggs, abandoning the present brood nest. But if she would do it at all, she would probably more readily go up than down, so the new hive on top of the old would be better than the way you suggest.

It is not necessary to wait till spring to secure the queen so as to change her. Put an empty hive over the one in which the bees are, after removing any honey board or cover that may be there. Cover the upper box (you need have no frames in it), and drive the bees by smoking and drumming them. They will soon ascend into the upper hive and you may then hunt the queen and remove her, then introduce the other one in the usual manner. I believe that is the method that I would employ, leaving the transferring of the bees until fruit bloom, next spring.

FUMIGATION FOR MOTH

Some time ago I saw an article on fumigating combs for waxmoth and now I cannot find it. Will you please advise me what to use, as I have just bought about 100 hive bodies with comb and some of them have a few moths in them.
NEW YORK.

Answer.—Combs may be fumigated with two different drugs, to destroy the moths. Brimstone, such as is sold in drug stores, is used in a room in the same way as for disinfecting the room. It is inexpensive. If you do not have an airtight room, you may burn it under a pile of beehives, placing an empty hive or two immediately above the brimstone at the bottom of the pile so that the heat of the burning sulphur will not melt the combs.

Bisulphide of carbon is used also. This is an explosive compound when put in contact with a light. It may be poured on a rag or in a saucer and enclosed at the top of a pile of combs, in a well closed lot of hives or supers, so the fumes may not escape at once. It is used at the top of the pile because its fumes are heavy and float downward, while the fumes of brimstone, being hot, ascend upward. A teaspoonful of this is sufficient for the combs of one hive.

As these drugs will not kill eggs, it is well to examine the combs or repeat the operation at the end of a couple of weeks.

Cold weather will destroy all moths, eggs and larvæ.

QUEEN EVIDENTLY KILLED

Kindly advise me what to do with the colony herewith described. On July 26 I made a division of a parent colony. To the part left on the old stand I introduced a laying queen received through the mail. She was laying two or three days previous to August 15. On August 26 I found 5 full frames of brood; no eggs, no larvæ younger than two days; no queen, but several queen cells with royal jelly in them. There are plenty of bees and stores (over 30 pounds of honey), but little prospect of a full flow on account of a severe drought.
NEW YORK.

Answer.—Your queen has evidently been killed accidentally and the bees are rearing another. The only thing to do is to let those young queens hatch and watch the colony. The first queen that emerges from the cell will kill the others.

It will be a good plan to examine the colony about 10 days after the young queen hatches, because if there should be no brood then, it might be necessary to give them brood again. It would be a good plan to give them brood anyhow.

If your bees do not have enough honey for winter, complete the stores necessary with sugar syrup or with combs of honey from hives that can spare some.

CUSTOM EXTRACTING

When extracting honey for neighbor beekeepers as a business, what is the customary charge? Is the work done on the shares or by the day? What is the customary agreement about the cappings and honey that drains from them?
MISSOURI.

Answer.—We have not extracted for others in a long time. We used to get one-fifth of the honey and all the cappings. But we gave four-fifths of the honey in the cappings to the owner. Labor being higher now, comparatively, it might be worth a little more but not very much. We used also to buy the honey of the party, as most farmers don't know what to do with a large amount of honey.

If the amount of honey is only a few hundred pounds, it would probably be best to charge for your time.

The Sense of Smell Again

By W. A. Price.

IT is pretty generally understood that the sense of smell plays a large part in the activities of the bee and especially that phase having to do with the location of nectar secreting plants and other materials used as food. However, an incident coming under my observation, which I shall here relate, causes me to attach more importance to this phase of the bee's activity than I had heretofore done.

On Saturday, October 4, 1924, I prepared some sugar syrup for winter stores. The cooling was done in an open double boiler in a basement room of the Agricultural Building at Purdue University. This room is surrounded on all sides except one (north) by other rooms. There are four windows on the north or exposed side situated high on the wall and provided with ventilators. The window nearest the boiler was raised at the bottom about three inches and all others were closed at the time the cooking operation was started. The water was raised to the boiling point before the sugar was added. This was done at 10:45 a. m. Within 15 minutes of the time the sugar was put in the boiler, bees began bombarding the windows. My attention was directed to the window (as I was only five feet from it) and I immediately closed it to prevent any of the bees getting into the room. At this time (11:00) there were 14 bees trying to get into the room through the window. This interested me because no bees had obtained entrance and therefore it is not likely that any of the first arrivals returned to the hive with the much-talked-of dance to inform the sisters of the new field of stores. However, since I did not observe the first arrival, I could not be positive that all of the fourteen arrived at about the same time. I allowed the syrup to cook one and one-half hours and during this period tried to keep a record of the number of bees coming to the windows. Thirty minutes after the cooking operation started I estimated (as it was impossible to count accurately) there were 90 bees trying to gain entrance to the syrup room. At 11:35, or 45 minutes after cooking started, there were about 110 bees at the window, and 15 minutes later there appeared to be about the same number. Fifteen minutes later, or at 12:00, there seemed to be a slight decrease in numbers—about 90—and at 12:30, when the cooking operation was stopped, there were only about 50 bees at the window. The can of syrup (80 pounds) was taken immediately from the boiler and placed in a cooling room formerly used as a refrigerating room, and surrounded on all sides by other rooms. Thirty minutes after removing the syrup from the cooking room the bees had completely deserted the windows that they had so strongly bombarded earlier in the day.

Not being exactly satisfied with these observations, I repeated the experiment on the following Monday, October 6th, and on Wednesday, October 8th. The same syrup was brought into the cooking room on October 6 and heated to boiling. At this time I was on the lookout for the first bee to appear at the window. The cooking was started at 10:15. The syrup was steaming at 11:00. There was a rather brisk wind and this, coupled with the slow heating of the syrup, may have made the lure less effective. At any rate the first bee came at 11:40, and during the period of one hour (11:40 to 12:40) 16 bees tried to gain entrance at the window.

On October 8, under mild, bright weather conditions, the experiment was repeated. This time, however, new syrup was made, raising the water to the boiling point before adding the sugar, which was done at 11:35. Also, the window was opened and the bees were killed as they entered.

The first bee arrived 10 minutes after the sugar was added to the boiling water, and altogether 19 bees came during the thirty-minute period from 11:45 to 12:15.

There was no information carried back to the hive by the bees that entered the room, and I am inclined to believe that they were lured individually by the odor emanating from the room. Indiana.

Typographical Error

In the editorial item of the last issue of the American Bee Journal, I find a typographical error which in itself is of no consequence except that in this state we are trying to get people to call the State Agricultural College by its proper name and not the Storrs Agricultural College. Also, Prof. Koon's name was misspelled, which was evidently a typographical error.

I have noticed in previous notices of the foulbrood laws of different states, that Connecticut was not given credit for excluding bees on combs which were not accompanied by a certificate of good health. As I notice, you are planning to revise this list. I am sending in a copy of the laws respecting beekeeping in this state and you will see on page 9 of this booklet that the law forbids the shipment of bees on combs into Connecticut unless accompanied by a certificate of inspection. I trust you will be glad to make this correction in the revised report.

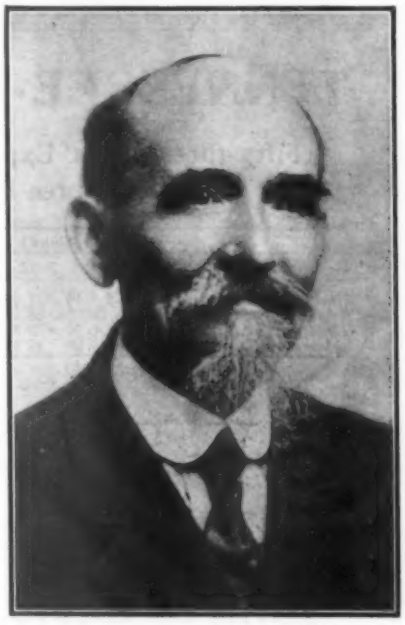
I am also very much interested in the articles in the American Bee Journal and have found particular value in those in the last number, which are especially good.

L. B. Crandall,
Specialist in Bee Culture.

Death of G. C. Greiner

Through the courtesy of John N. DeMuth, President of the Western New York Honey Producers' Association, we have been informed of the accidental death of our old friend, G. C. Greiner, of La Salle, N. Y. The newspaper mention of the accident follows:

"Niagara Falls, Aug. 3.—G. C. Greiner, 78 years old, of La Salle, was killed Saturday night when a Lehigh Valley passenger train struck his automobile at the Cayuga drive



G. C. Greiner

crossing of the New York Central tracks. He was almost totally deaf and failed to hear the warning shouts of the crossing watchman.

"Greiner's skull was fractured. Death was instantaneous. The car was carried a quarter of a mile on the fender of the locomotive."

Mr. Greiner was one of our oldest contributors, he and his brother, Friedmann, who was also killed accidentally some years ago, being both very active and practical beekeepers.

Mr. Greiner came to the U. S. in 1862 at the age of 15, from Germany, with his parents. In 1875 he went into the bee business and the manufacture of hives, with his brother. They succeeded well from the beginning. They were then at Naples. Later, he moved to La Salle, where our editor called on him. He had not for years attended any beekeepers' conventions, on account of his total deafness.

An article from his pen will be found in this number.

$400 In Premiums

Tennessee State Fair, Nashville, September 21-26, offers $400 in premiums on bees, honey and beeswax. Entries close September 8. Competition limited to residents of Tennessee. Mr. Armstrong Allen is superintendent of the Apiary department.

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Untested	$2 00	$ 8 50	$15 00	$1 50	$ 7 50	$13 50	$1 25	$ 6 50	$11 50
Select Untested	2 25	9 50	18 00	1 75	9 00	15 00	1 50	7 50	13 50
Tested	3 00	16 50	30 00	2 50	12 00	22 00	2 00	10 50	18 50
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The very best queen, tested for breeding, $15.00.

I sell no bees by the pound or nuclei, except with high-priced tested and breeding queens.

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

JOHN M. DAVIS, Spring Hill, Tenn.

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By Dallas Lore Sharpe.

You have beekeeping books—but have you read one devoted to making it more

Interesting--Delightful--Thoroughly Satisfying?

Such a book is rare. "The Spirit of the Hive," by Dallas Lore Sharpe, is a wonderful revelation of the true pleasure and poetry of beekeeping. Dallas Lore Sharpe is both a beekeeper and a nature writer with imagination.

Altogether "The Spirit of the Hive" is a book in which you, as a beekeeper will find a true and lasting pleasure.

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AMERICAN BEE JOURNAL, Hamilton, Illinois

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WRITE IF YOU NEED DESIGNS

Granulation a Sign of Purity

To illustrate the honey question as it arises in Canada, we print below a letter addressed to Mr. Pettit by a Canadian beekeeper and Pettit's reply. This shows the appreciation of granulated honey by consumers in parts of the country where people get accustomed to its use.—Editor.

I am taking the liberty to ask you a few questions regarding honey, as it seems to me you should be in a position to know a good deal about it. My reason for asking you about honey is that I do not pretend to be a honey expert, but I do think I know good honey from poor stuff, and I happened to get some poor quality a short time ago. I have always thought that pure honey will harden or candy sooner or later. Now is it possible for pure honey to stay like syrup, or not harden? How long does it generally take pure honey to harden or candy?

I received honey recently that was shipped to me marked "This side up," the first time I ever experienced the like. Just like syrup and not the real honey taste. Would you be kind enough to help me get straight on this, as I do not want to be bluffed?

Pettit's Reply

In the first place it is very probable, almost certain, that you received pure honey. The Dominion law is very strict and the buyer always has the privilege of sending a sample to the Department of Inland Revenue at Ottawa for analysis, and a prosecution may follow.

Honey does queer things, and last season's honey was about the queerest. There are southern honeys which never granulate, but all well-ripened Canadian honey will granulate eventually. Last season the clover was very late and continued right into buckwheat, which meant that what clover honey could be saved from buckwheat color and flavor had to be taken from the hives in some cases before it was properly ripened. This unripe honey was inclined to ferment and the remedy was to give it a good warming up as in the process of liquefying granulated honey.

Now if you have ever liquefied honey that was nice and hard, as you know first-class honey should be, you know that it almost never regains that nice, firm condition again. Without knowing all the particulars, I would guess that the one who sold you that honey had liquefied it for some reason, probably because it was beginning to ferment. Unless you paid a very high price, I would be inclined to be lenient with him, as I know the difficulties of last season; but I would write him much as you have written me and see what he has to say. I am presuming that this is Canadian honey. If from the States, there is a peculiar notion there that all honey should be liquid, and that would explain it. Clover honey usually granulates hard in a few weeks after it is removed from the combs.

Meetings and Events

1924 Iowa Apiarist Report Out

We have just received our copy of the 1924 Report of the State Apiarist for Iowa, Mr. F. B. Paddock. The report covers 92 pages consisting of the complete year's work for the State Apiarist, and a compendium of the papers read at the annual meeting of the State Beekeepers' Association in December.

Mr. Paddock bemoans the shrinkage in number of basswood trees in Iowa. These trees are fast disappearing from roadsides and woods, to the loss of the beekeeper. (Hadn't we better institute a "Plant a Basswood Tree" campaign among beekeepers wherever feasible?—Ed.) Sweet clover, in contrast, is rapidly increasing.

The average per colony production for Iowa for the year 1924 was 79 pounds. Forty-three per cent of this was comb honey. This is a contrast over the previous eight years average which shows a percentage of 51 for comb. A gradual change is coming in favor of extracted, he thinks. There is also a slight tendency toward the production of bulk-comb honey in Iowa.

Marketing conditions for honey, he reports as very unsatisfactory.

Seventy-six demonstrations in demonstration apiaries were held in 21 counties. The average production from demonstration colonies was 152 pounds, while the "check" colonies produced an average of 95 pounds, which was still better than the average for the state.

Area clean-up work in foulbrood was attempted in two counties in the state—Woodbury and Warren—while inspection trips were made into the balance of the state on call. In all, 11,631 colonies of bees were inspected, of which 13 per cent were infected with American foulbrood.

Iowa beekeepers may obtain copies of the report by addressing request to State Apiarist F. B. Paddock, at Ames.

Honey Crop Notes

Section honey is selling, or retailing, for from 32 to 35 cents per pound around here. I sold 98 sections last night for $30.00, and this retailer drove 15 miles to get it at my house.

I have four old colonies, and one new one (only one swarmed) and, so far, three colonies gave 84 full capped sections, and two hive bodies full of capped frames, each, while the fourth gave 96 full capped sections, and two 8-frame hive bodies fully capped in frames, all frame spaces 1½ inches apart.

These four old colonies are now filling their third hive bodies, while the new swarm has finished 24 sections and is filling a hive body.

I have converted all of my brood bodies (standard size) in Jumbo and Quinby size by adding to their bottoms 2 inches and a fraction, and fastening with 2-inch hive staples, so that they now all take Quinby size frames, and even yet, I expect to use two hive bodies in the spring, for them to brood in. I have reference to both 8 and 10-frame hive bodies. For section honey, I prefer the 8-frame hive made over to take Jumbo frames, spaced to 1½ inches apart, as they seem to fill their sections out heavier, and cap a super much easier and quicker. This is the case also when an 8-frame super (24 sections) is placed upon a standard 10-frame hive, but this is not very easily done unless one has large old-fashioned hives with enough outer large supers to cover those inner 24-section supers.

C. C. Spink, Falconer, N. Y.

Southeastern Meetings.

The first branch of the schedule of meetings arranged with the co-operation of the American Honey Producers' League is to be held in the southeastern states beginning with the Maryland meeting on September 7.

Complete list of speakers is not yet available. However, some of those already promised to attend the meetings in whole or in part are as follows: James I. Hambleton of the Bee Culture Laboratories at Washington; T. M. N. Lewis of the G. B. Lewis Co.; J. J. Wilder, editor of "Dixie Beekeeper" and C. W. Cary of Norfolk, Va.

The meetings and their dates are as follows:

Sept. 7—Maryland meeting at the Timonium Fair, near Baltimore.

Sept. 8 and 9—Tennessee State meeting at Knoxville.

Sept. 10 and 11—North and South Carolina combined meeting at Charlotte, N. C.

Sept. 14 and 15—Georgia State meeting at Valdosta.

Sept. 16 and 17—Alabama State meeting at Montgomery.

Apple Week to be Celebrated

The "Kansas City Packer carries notice of the first campaigns already, started, towards the successful culmination of an "apple week" campaign for this fall, date not yet set. It is stated that New York City alone, through its Commission Merchants' Association, has guaranteed the raising of $10,000 towards the success of the campaign, to be expended in various advertising, including placards, window displays, newspaper advertising, etc.

Chilean Congress of Beekeepers

The beekeepers of Chile have organized a Congress of South American Beekeepers, which met in Santiago De Chile on the 21st of May.

Its president, Don Juan Barriga, is about to publish a monthly magazine, "El Apiculter." He is a member of the Scientific Technological Commission of Apiculture of Chile, author of a number of articles on beekeeping published at different

(Continued on page 441)

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AMERICAN BEE JOURNAL

Hamilton, Illinois

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Honey Containers

5-lb. Friction Top Pails, per case of 12*	$1.10
10-lb. Friction Top Pails, per case of 6	.90
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10-lb. Friction Top Pails, per carton of 50	5.00
60-lb. Square Cans, per case of 2 cans	1.25
60-lb. Square Cans, in bulk, each	.40
16-oz. Round Glass Jars, per case of 24	1.25
6½-oz. Tin Top Tumblers, per case of 48	1.60

All above prices are F. O. B. Boyd, Wis.

Write for our prices on comb honey shipping cases.

August Lotz Company, Boyd, Wis.

Beekeeping In Russia

I am apicultural specialist and scientific collaborator in Tula's Experiment Station for Apiculture. Tula is situated about 190 kilometers (about 120 miles) south of Moscow. Its specialty is the manufacture of tea-urns (samovars) for all Russia. Our apiary has 115 colonies in Dadant-Blatt and Langstroth hives. The crop of last summer was an average of 16 kilograms (35 pounds) per colony, the best yield from one colony being 64 kilograms (141 pounds). The main source of nectar is white clover. This summer the crop is likely to be small; meteorological conditions being unfavorable—constant cool and dry winds and cold nights.

We have a very good meteorological station, with three automatically registering apparatus, pluviograph, thermograph and hydrograph. We have 3 control hives on spring balances which also record automatically.

The station has also bacteriological, biological and botanical sections and a garden of local nectar plants.

In bacteriology we have investigations of nosema and foulbroood.

The district of Tula covers about 3,000 square kilometers, with a percentage of 15 of forests. It contains about 120,000 colonies in 9,300 apiaries. The average size of apiaries is therefore about 13 colonies. About 74 per cent of the colonies are still in the old style of hives without frames. Most of the movable-frame hives are Dadant hives. Outside of these, the modern hives are mostly in Langstroth-Root hives.

The district is naturally divided in two parts; the northeast, with more forests and gardens and less bees, but with a greater percentage of movable-frame hives. The main source of honey here is linden and white clover, very fine honey. The southwest part is the area of "steppes," low lands with very fertile soil. The honeyflow is from white clover and buckwheat. They are less progressive and produce dark honey by following the old method of killing the colonies that they wish to harvest.

The most widespread diseases are European foulbrood and nosema, which appears to be worst in the forest regions where bees harvest much honeydew.

We now have a very good evolution into beekeeping co-operation, which supplies the beekeepers with goods, comb foundation, smokers, veils, tools and helps them to sell their honey and wax.

This district is the best Experimental Station for Apiculture in Russia. It is kept by the district's Department of Agriculture.

A. S. Mikhiloff,
Experimental Station of Apiculture,
Tula, Russia.

(There were very few mistakes in the English of this letter and I am quite sure very few of our readers could do as well, in the Russian language, as Mr. Mikhiloff does in our own tongue.)

Meetings and Events

(Continued from page 439)

times in the Chilean press, and a large owner, beekeeper and nurseryman.

The Congress officially adopted the principle of the Langstroth invention of movable frames.

The next Congress is to take place in the City of Temuco. Our readers probably know that Chile is a narrow country from east to west, but a very extensive country north and south. It covers over 2,400 miles in length. It has had great reputation as a honey-producing country for years, even though the apiculture was carried on in the old way until lately.

We extend our congratulations to the beekeepers of Chile.

Georgia Beekeepers' Annual Meeting

The annual meeting of the Georgia Beekeepers' Association will be held at Valdosta, Ga., September 14-15, 1925. A "field meet" will be staged in the apiary of J. W. Sherman on one of the days. Among the speakers expected to be present are James I. Hambleton, of the Bee Culture Laboratory, Washington, D. C.; T. M. N. Lewis, of the G. B. Lewis Company, Watertown, Wis.; Hon. J. J. Brown, Georgia Commissioner of Agriculture, and others. Mr. D. W. Howell, of Shellman, Ga., is President of the association. W. C. Barnard, Glennville, Ga., is Secretary-Treasurer. A large attendance is expected, as Valdosta is the center of the honey-producing centers of south Georgia and north Florida, and many are expected from both states.

Aberdeen, S. Dak., Beekeepers Organize

About sixty enthusiastic beekeepers from Brown County and adjoining counties met at the Lothrop Apiary Saturday afternoon, July 25, and organized the Aberdeen District Beekeepers' Association, to include all beekeepers tributary to Aberdeen.

The following officers were elected: Grover Lothrop, Aberdeen, President; A. J. Svarstad, Aberdeen, First Vice-President; Walter Perrin, Ferney, Second Vice-President; Miss Josephine Stewart, Mansfield, Secretary-Treasurer.

The following committee was appointed to draw up the by-laws: Mr. L. A. Syverud, Bath; County Agent Dittmer; W. S. Streeter, of Groton, and Grover Lothrop, of Aberdeen. The membership fees for the Association are $1.00 a year.

The meeting was called to order by Dr. Brenckle, of Northville, who presided and gave a short introductory talk on purpose of the meeting, stating the benefits of organization among beekeepers. Mr. L. A. Syverud, State Bee Inspector, gave a talk on state inspection work and control of American foulbrood. He explained that help for inspection work in a community can be obtained by a petition consisting of three beekeepers, sent to the state inspector.

County Agent W. E. Dittmer, of Brown County, gave a talk on swarm control and demonstrated the Demaree plan of swarm control for extracted honey products and a method for controlling swarming in case of comb honey production. In the talk it was emphasized that swarm control plans are based on a method of handling the bees so that there is a disturbance of natural emergence of the brood just previous to swarming time, which causes the young bees to visit all parts of the hive. Some other essentials in reducing swarming are sufficient room for brood rearing, room for storing honey, young queens, plenty of ventilation, use of standard equipment to provide proper spacing, and good combs in the hive.

Missouri Commission Merchants' Act

At its last session, the Missouri State Legislature passed what is known as the Missouri Commission Merchants' Act. This act repeals an act of like name passed in 1921.

The new act is made much more strict than its predecessor, and makes it imperative that anyone handling farm produce on a commission basis be required to procure a license from the state, and to submit themselves to the restrictions of the act under certain penalties. This does not apply to auctioneers at farm sales, and similar activities.

Honey is specifically mentioned as coming under the requirements of the act.

Carolina Beekeepers' Meeting

At Charlotte, during September there will be held a great meeting of the beekeepers of the two Carolinas. The program for this meeting will be the best. It will be worth while in time and expense to every beekeeper of these two states to attend. The meeting will last for three days.

We hope to publish the details and program in our next issue; in the meanwhile, make your plans to go at least for a day or so. Several automobile parties should be made up from Anderson County Association. The expense for this trip will not amount to very much. It will do all lots of good—Let's Go!

Oregon State Fair

Again the attention of the beekeepers of Oregon is called to the State Fair Bee and Honey Exhibit. No material changes have been made this year in the list of premiums offered . A total of $234 is offered in premiums in the department. First and second premiums are offered for the following entries: Alfalfa comb honey, fireweed comb honey, clover comb honey, alfalfa extracted honey, clover extracted honey, fireweed extracted honey, beeswax, honey vinegar, single comb nuclei and queen bees (three-banded Italian, Golden Italian, Carniolan, Caucasian), food cooked with honey, honey plants, and the largest and most attractive display of the various products put on by one individual. Further informa-

50c——ITALIAN QUEENS——50c

In order to gain more customers for our HIGH GRADE ITALIAN BEES AND QUEENS, we are offering them at 50c each, one or one hundred.

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We handle the finest line of bee supplies. Send for our 1925 price list. Our quotations will interest you.

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Good Stock-Bred Right-Shipped Right

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50c each, any number.

High Grade Three-Banded Italians only.

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Select young laying queens, untested, 75c each. Any number. Tested queens, $1.50 each. Any number.

Promptly mailed to you in large mailing cages with 1925 inspection certificate. Safe arrival guaranteed.

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Help to Popularize Honey

If beekeepers all over the country were to market some of their product packed in glass through local grocery stores—think what an advertising campaign it would be.

Specify "Diamond I" Fluted Honey Jars in ordering from your Supply Dealer—and be sure to get the National Package adopted as standard by the American Honey Producer's League.

DISTRIBUTED by Colorado Honey Producer's Association, Denver, Colorado; Dadant & Sons, Hamilton, Illinois; G. B. Lewis Company, Watertown, Wisconsin, Memphis, Tennessee, Wichita, Kansas, Albany, New York and Lynchburg, Virginia; Texas Honey Producer's Association, San Antonio, Texas; A. G. Woodman Co., Grand Rapids, Michigan.

Illinois Glass Company

Established 1873

ALTON, ILLINOIS

tion relative to the exhibit may be had by writing to the State Fair Management at Salem, asking for their list of premiums and rules. All entries must be on hand early Monday morning, September 28. The entrance fee is 10 per cent of the first premium and it will be necessary for the exhibitor to advance that amount of money when shipping his entry.

It is probable that arrangements will again be made for a food demonstrator to be in charge during a portion of the fair.

An added feature this year will be moving pictures each day during the fair.

Illinois Appointment

We are informed that Mr. V. G. Milum, of Wisconsin, has been selected to fill the place left vacant at the Beekeeping Division of the State University, at Urbana, by the departure of Dr. Wallace Park, who returned to Iowa, where he was formerly employed, at Ames. We believe Mr. Milum will prove a very efficient official. On the other hand, we must congratulate the Ames people on getting back one of the most careful workers we know of, in the line of beekeeping.

Pecan Crop Short in Texas

The pecan crop for Texas promises to be very short this year. This is not caused so much by late frosts as by extreme drought during the pecan growing season. The bulk of the pecans have, as a result, dropped from the trees. Another good indication that the honey crop, also, for that state, cannot be large, since honey plants are likely similarly affected.

Another Label Paste

Like cures for colds, the formulas for label pastes are endless, but, fortunately or unfortunately, the merits of a paste are more easily and certainly determined than are the merits of the former. A year or so ago I concocted a paste that has proven highly efficient and cheap, so will give the formula:

Add cold water to rice flour and beat into a batter. When smooth add boiling water, stirring meanwhile. When of the desired consistency, add from 10 to 25 per cent water glass and mix thoroughly; then add a half teaspoonful of carbolic acid, as a preservative, and the paste will keep for any length of time if protected from evaporation.

If rice flour is not obtainable, cook rice in a double boiler with plenty of water, allowing the cooking to continue until the grain is mostly dissolved; then beat it up well with an egg beater, or otherwise. The gruel thus obtained should then be placed in a fine-meshed cloth and worked through it, discarding the coarse particles left in the cloth.

The quantity of carbolic acid given is for a quart of paste, and if the odor is objectionable, some wintergreen or peppermint may be added to conceal the odor of the acid.

This paste adheres to tin very well, but I have found that any label will stick to tin better if the spot on which the label is to be placed is first rubbed with a cloth moistened with a weak solution of lye, sal soda, or any washing powder, for it seems that in the process of manufacture there is left a film of greasy substance on the surface of the tin, which sometimes makes it difficult to get a label to adhere to it.

H. E. Weisner, Tucson, Ariz.

That Wisconsin Bee Tour

By G. H. Cale.

WE were very lucky to be in on it. Wisconsin has set the pace in many things in beekeeping, and to travel there gives one the impression that all is well; that beekeeping is becoming a business worthy of the time of the finest type of people who have to earn money for their daily bread.

The word "Wisconsin" is getting to be one to juggle with. It is almost a food product trade-mark. There is Wisconsin butter and Wisconsin cheese and Wisconsin honey, all three team mates, since dairying and clover fields and the honeybee all go together. Wisconsin honey, however, not only carries a vision of cows and pastures but also of basswood-studded lakes and streams and a smattering of sweet clover which is getting to be more than a smatter every year.

This is an unbeatable combination for honey and it is small wonder that Wisconsin beekeepers, realizing the quality of their product, determined to capitalize on it. Through their Department of Markets grading regulations for both comb and extracted honey have been established so that only the finest honey reaches the quality grocery trade. The regulations give definite grades for comb honey and require that only a well strained, clean, heavy-bodied extracted honey be classed as number one. Extracted honey is also graded as to color according to the standard honey graders. Each beekeeper who grades under the regulation is also furnished a packer's number by the Department of Markets. Those who do not wish to grade or whose honey is below the standard can market only in containers labeled "Ungraded" honey. The results are obvious. The stores are seeking the graded product and the beekeepers are seeing the advantage of it, in keeping a uniform market.

President Gwynn, of the State Association, tells me that on the west side of a north and south line running close to Madison, the capital city, honey prices rule five cents lower than in the east where the new marketing regulations have been thoroughly enforced. Prices talk. There are few of us who will not take a higher price if we can get it. The trouble is too many of us are scared silly by fear the other fellow will get his price first.

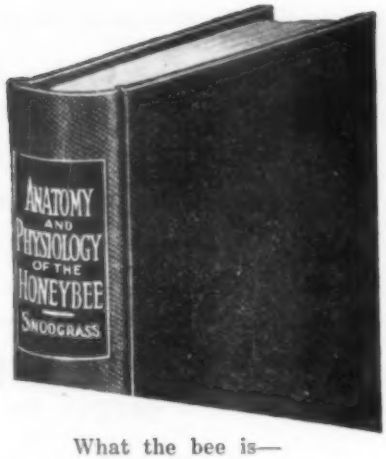
Wisconsin beekeepers are fortunate in having very close co-operation in the work of the state departments that have been given the handling of their problems. There are four units all working together: the University of Wisconsin, where educational and extension work is carried on by Professor H. F. Wilson; the Department of Agriculture, with Dr. S. B. Fracker and C. D. Adams conducting the inspection work; the Department of Markets, with C. D. Adams administering the grading rules, and the State Beekeepers' Association, with President Gwynn, a sure-enough watchman for the interests of the beekeeper. All these activities are in Madison, which is also a decided advantage, and all of the men in charge are in full co-operation, a splendid and often unusual situation. With this kind of machinery, progress is all up to the beekeeper. He can make his place in the sun just as luminous as he likes.

The bee tour, starting August 11 and ending August 14, was planned to take the place of the Chautauqua, which has been held with such success for the past few years. It was a change and a decided success. In these days of "gas-buggies" it is not hard to get a crowd. There were about thirty machines and close to a hundred people out each day. A certain number would drop out in places to be supplanted by others joining at different points on the route. It is safe to say that between 250 and 300 people went on some part of the tour and fifty or sixty autos.

The route started at Janesville, from there to Fort Atkinson, to Milwaukee, to Fond-du-Lac, and north to Chilton, visiting interesting apiaries all the way. The amount of interest in the tour is shown by the number of sections represented—Alabama, Illinois, Washington, D. C., and Ontario as well as Wisconsin.

In the section covered, the area clean-up work for American foulbrood has been in operation for some time and it gave a chance for beekeepers to get a first-hand impression of the value of this method of caring for disease. Personally, I have the impression that the method is very effective but necessarily dependent on the amount of funds in hand to speed it up. The history of the yards visited, which have been cleaned up, shows quite clearly that it is entirely possible to remove disease altogether from a region and keep it out.

At the beginning of work in a section, considerable leniency is allowed in the method of treatment. Most beekeepers choose to shake their bees to save them. But as the disease is reduced to a minimum, only severe treatment will clear up the last trace. During the past year, sterilizing outfits have been taken to infected apiaries where the beekeeper is aided in saving his combs with the Hutzelman solution. We saw two of these stations, one in operation. If a thorough cleaning is made, the bees disposed of, and equipment all treated, then, after a brief rest, package bees may be bought to begin again with a clean outfit.



What the bee is—
What it does—
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Valuable to every beekeeper who wishes to have in his library an authentic reference work on the insect of so much interest and importance to him.

Published February, 1925.

Anatomy and Physiology of the Honey Bee

by R. E. Snodgrass
U. S. Bureau of Entomology.

327 pages, 6x9, 108 illustrations, $3.50

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American Bee Journal

Hamilton, Illinois

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Pure Three-Band Italians, Bred For Business

Heed the usual autumn warning. Don't let a single colony go into winter without a first-class queen. This is our last ad. this season, but we will be prepared to furnish you the very best queens by return mail just as late as you can use them. Several sources of nectar make conditions ideal for fall queen-rearing. Prices as follows:

Untested, **50c** each. (Choice queens only.)

Select untested, 65c; tested, $1.00 each.

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CRAWFORD, MISS.

60c EACH

Good Three Band Untested Queens at 60c each, any number, for month of September

GOOD QUALITY TESTED $1.50 EACH

D. W. HOWELL, SHELLMAN, GA.

PRICES SMASHED MR. BEEKEEPER

QUEENS BY RETURN MAIL

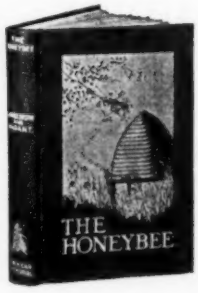
Now is the time to requeen. Note these prices. These queens are reared by men who know how. I have the equipment and experience necessary to produce queens and bees. Three-banded Italians only. Safe delivery and satisfaction positively guaranteed.

PRICES

1 or 1,000 untested queens ..... 45c each
1 or 1,000 select untested queens ..... 50c each

The home of the Good Queens. Ask your beekeeping friends.

THE FARMER APIARIES, Ramer, Alabama



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Leather Colored Italian Bees and Queens

ROOT AND MOORE STRAIN

100 Queens at ..... $ .75 each	25 Queens at ..... $ .90 each
50 Queens at ..... $ .80 each	Less Queens at ..... 1.00 each

Packages $2.50 per 2 pounds

Delivery after March 1st. Satisfaction guaranteed.

ROY C. PATTEN
King's Lane, Whittier, Calif.

Queens For Requeening

Forehands 3-Bands

The best is the cheapest. They satisfy; why? Because a lifetime has been spent in breeding QUEENS OF BETTER KIND.

Untested 1, 80c; 10, 75c; 100, 70c each

Safe arrival and perfect satisfaction guaranteed in the United States and Canada.

N. FOREHAND, Gonzalez, Florida

Peculiar Behavior

1. I have been keeping 3-banded Italians, and wishing to broaden my experience somewhat, I sent for a Gray Caucasian queen this spring. In due time she arrived, and I undertook to introduce her in the usual manner to a colony which had had an old queen, and had started queen cells in order to supersede her. I removed the old queen, and also the queen cells, shaking the bees up pretty well in the process. They immediately became aware of their queenless state, as they became quite excited. I then placed the cage with the gray queen over the cluster and closed the hive. I noticed that they did not seem to calm down much but thought nothing of it. Next day I opened the hive, and removed the cardboard from the candy, taking note of the fact that the cardboard had not been gnawed much. After five days I again opened the hive, and found that the queen had not yet been released. They had hardly worked at the candy at all.

I lifted the screen and allowed the queen to run out upon a comb of brood. They did not offer to "ball" her, but took no notice of her at all. I then went through the hive and found that they had built about ten or twelve new queen cells, probably using the last available eggs and brood, exactly as if they had been queenless. After five days more, I again opened the hive and found that the new queen had not laid a single egg. She had failed. I found her rambling aimlessly about on the combs, piping to beat the band. When I heard her pipe, I thought I could "smell a rat," but after a careful and thorough search over every square inch of the combs, I could find neither queen cell nor evidence of laying workers. Now what I would like to know is this: Did the bees know that she was N. G. at the time I first introduced her, and do they always act in this manner towards a sterile queen, or have I witnessed an occurrence which is quite rare? By the way, I know that the queen has not laid a single egg, as I removed her after several days and placed her in an observation hive. Why do you suppose she seemed excited, and "piped" continually? I know that there were no queen cells nor extra queens in the hive. Or did the fact that she was of a different breed have anything to do with their behavior? I have read quite a bit on bees, but have never run across anything covering the above which leads me to believe that it might be interesting.

2. I see that the Heddon hive is rarely mentioned, and seems to find very few if any supporters, but I am using the Heddon idea and think that for a small home yard it is O. K. I use nothing but shallow Langstroth 10-frame supers for brood and surplus and think the advantages outweigh the faults by a long ways, for this locality. I winter in the cellar in one shallow extracting super only. In the fall, I crowd them all down into one super, placing eight frames

of light, good honey, and two frames of empty comb in same. You may think that a shallow extracting super will not hold a strong colony of bees, but it will. They will hang out "something fierce" in the warm days, but when "Jack Frost" starts to tickle them they all seem to find a place inside, and crowd in until you would think the walls would bulge. They winter much better that way than in the Langstroth hive. Also they winter on less honey, as the heat is conserved better. I wintered colonies last winter that did not lose a hundred bees. When spring comes, I set them out and give them a super of comb containing some pollen and a few frames of the poorer grade honey saved for this purpose. I keep careful watch over them, and keep exactly in step with their development and needs always considering the weather. By using the shallow supers this can be accomplished much more easily than when using the full depth hives, and it is a great thing to have just enough room and not too much, when the thermometer stands at 75 above at noon, and falls to zero by nightfall, as it does sometimes in this part of the country. Of course, it is nice to have some sort of protection, too. I use burlap bags partly filled with sawdust, also newspapers, tar paper, etc., but this is not so necessary when your hive is just the right size for the colony it encloses. When they start to think about building drone-comb, which is generally pretty soon after they are set out, I give them a frame of thin or extra thin foundation and let them cut and "chaw" it all they want to. Then when they have a nice mess of drone-comb all made up to suit themselves and have it full of capped brood, I remove the whole thing and uncap it and feed the "grubs" to my chickens. They like 'em fine. This may seem to no purpose, but I notice that when I allow them to follow their natural inclinations in this manner, they are more likely to leave my nice wired brood foundation alone, and not put a row of drone-cells along the edge or mutilate the foundation to make drone-comb, as I have seen them do. When forming my colonies, or strengthening weak ones, I can take away from each colony exactly what they can stand when using the shallow frames, also in the case of new colonies, they are in one shallow super and can keep up the heat easily without the use of division boards. For raising queens I use the supers instead of having extra equipment good for nothing else in the line of small three-frame hives. The supers seem to do just as well. My frames being all of the same size, I can take a frame from any part of any hive and place it in any part of any other hive in the yard. By using the 4x5 sections I use the same size super for comb honey, also. The supers are lighter to handle, and twice the number of colonies can be wintered in a given space. This is surely a great advantage. I find it so, anyway.

Of course, I fully realize that one may do many things in a small home yard that he could not think of in a large yard, or in outyards. Next year when I put in my first outyard I shall use M. D. hives exclusively, as they undoubtedly require much less manipulation.

3. I use Dadant's wired foundation throughout, and think if I were offered my choice of foundation or combs I should choose wired foundation, if the combs were not drawn from it. The slotted bottom bars are sure fine dope. I have discovered a use for them that I haven't seen advertised as yet. When making up frames of foundation for bulk comb honey, I place a full sheet of thin foundation in the usual manner, then cut a narrow strip and place it in the slotted bottom bar, allowing it to extend a half inch above the bottom bar, and secure it in place by means of two short brads through the bar. This makes a top and bottom starter, as required to produce the finest section honey, and works just as well. The bees will draw the bottom starter up to meet the top sheet and will not leave the space below as they do so often otherwise. It produces a very fine looking and even frame of honey, the frame being filled from top to bottom bars.

After struggling along this far, you will no doubt be tickled pink that I haven't written for six months, and will be hoping that I don't for six years more, so will chop off and call it a job. Don't let me lose a single issue of the American Bee Jornal, that's all I ask.

Minnesota.

1. I don't know, and I can only guess. My guess would be exactly the reverse of your opinion. I would guess that the hive has a young queen, that is why the old queen pipes. A colony which is building queen cells to replace an old queen is very often unsafe for queen introduction, because it is in abnormal condition. In a case of that kind I would introduce some home-bred queen of inferior value, and use the hive from which I took that queen to receive my valuable queen. It is twice as much work, but it usually pays, because a queen changed from one hive to the other within a few minutes is always more likely to be accepted in a colony in abnormal condition. As to the race being different, that cannot have any influence, so far as I know, upon safety of introduction. Of course, if your queen does not lay any eggs, that may be the reason why she has not been very well treated.

2. Yes, there are a few people who like the shallow super for brood chamber. Bingham used nothing else. There are a few advantages to it, such as you mention, but after trying it, we preferred the large hive, larger than the Langstroth. But the hive you describe is not the Heddon, by any means, except in smallness of frame.

3. Your top and bottom starters are on the same plan as Dr. Miller's. He always used them in the sections. It does make a solid comb.

MOTT'S NORTHERN BRED ITALIAN QUEENS

Select untested, $1.25 till June 1st, $1.00 each thereafter. Select tested, $2.00. Virgins, 50c. Michigan borders onto Canada. Save the long trip. No disease. Satisfaction and safe arrival guaranteed. Selected queens only.

E. E. MOTT,
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For sale by all dealers.
If no dealer, write factory.

R. & E. C. PORTER, Mfrs.,
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(Mention Am. Bee Journal when writing).

THRIFTY QUEENS
50c

each in lots of 10 or over. Smaller lots 60c each.

Safe arrival and satisfaction guaranteed in the U. S. and Canada. Pure mating and satisfaction the world over.

Thirty-three years of careful breeding assures you of good queens.

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Early Package Bees and Queens for Spring Delivery

J. E. WING, Cottonwood, Calif.

Most Nothern Breeder in Calif.

CAUCASIAN QUEENS

On and after September 1st our prices for our Grey Queens for balance of season are:

One untested queen, $1.35; six, $6.75; dozen, $13.50. Tested, one, $2.50.

Also package bees for early spring delivery. Write for prices.

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HONEY CONTAINERS

2½ lb. cans, per carton of 100		$4.00
5 lb. pails, per carton of 50		3.50
5 lb. pails, per carton of 100		6.75
10 lb. pails, per carton of 50		5.00

Write for prices on lithographed pails

Above packed in cartons which are dust proof, light and easy to handle, keeping your cans and pails clean until you are ready to use them.

5 lb. pails, per case of 12		$1.10
10 lb. pails, per case of 6		.90
60 lb. cans, 1 per case		.90
60 lb. cans, 2 per case		1.25

Above packed in wooden reshipping cases

GLASS JARS

8 oz. honey capacity, Tall or Fluted, per case of 24	$1.05
16 oz. honey capacity, Tall or Fluted, per case of 24	1.35
32 oz. honey capacity, per case of 12	.95

All above prices F. O. B. Reedsville, Wisconsin

Write for prices on large quantities of pails and glass jars, stating number and sizes wanted

SECTIONS

4¼x4¼—1⅛ in. Plain No. 2, per 1000	$7.50
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SAVE MONEY—on your supplies by getting our quotations on your requirements

A. H. RUSCH & SON CO., Reedsville, Wis.

Further Report on Sterilization of American Foulbrood Combs

By G. H. Vansell.

As announced in the American Bee Journal, February, 1925, page 55, a water-soap formalin has been used with fine success here at Davis, since early in 1924, to sterilize American foulbrood combs. Further tests of this mixture, mentioned as extremely promising, have been made continuously. Mr. Geo. E. King, in his article on "Disinfecting Diseased Combs" in the July, 1925 number of Gleanings in Bee Culture, calls attention to the fact that he has used the water-soap formalin mixture on the combs from one colony and, further, that no disease has shown up during their seven weeks' use for brood rearing. Several thousands of these water-soap formalin combs are now in use here and in many places near. Some of these combs have been in constant use since the spring of 1924 without recurrence of disease. Records of the work have been carefully kept.

It may interest many to know that 1,272 combs have been sterilized at Davis at a cost of $17.80 for the solution, or at the rate of 1.4 cents a comb. For every 30 combs treated, one gallon of the solution was absorbed. The process is exactly the same as outlined by Dr. Hutzelman in the original announcement of the alcohol formalin treatment except that the combs are **not** dried after the honey is dissolved and the water extracted. The dried scales shake out of the combs after treatment for 48 hours in the water-soap formalin bath. Some of the extracting frames without scales or brood were treated only 30 hours, with still no recurrence of disease.

Much praise is due Dr. Hutzelman and his associates for putting us on the right track in the treatment of American foulbrood. Others before him have been building the foundation of knowledge upon which our present success has been made. Let's all, in true scientific spirit, give credit to whom it belongs.

California.

Our Cover Page

It is of a ramada, or shade arbor, built over an apiary belonging to W. J. Stahmann, Clint, Texas. The story of Mr. Stahmann's success with bees was in our June number.

A story is told of the country where ramadas are plentiful, the Imperial Valley, of California. It is that the heat becomes so intense that the mercury pushes the thermometer two feet off its hook in the middle of the day. Now you can take this as you like, but it is evidently hot enough so bees need shade all the time.

Early Day Smokers

By Leslie Burr.

THE article in June American Bee Journal, by C. P. Dadant, on the development of the bee smoker set forth some new facts, at least new to me. It also brought to mind the old smudge pots that I saw in California when I first came, in 1906. These pots were of sheet metal and had the general lines of the firebox of the modern smoker, but were much longer. As I remember them, they had a diameter of about 7 inches and were about 12 or 14 inches high. The method of working with these smudge pots was to place them on the windward side of the hive so that the smoke would drift over the frames. I saw two of them identical. One was at an old apiary in the sage region north of Los Angeles, the other in the San Goreonio Pass, near Capazon. The information I received at the time was to the effect that those smudge pot smokers were in general use, prior to the modern smoker.

The best of the old-time devices I ever saw used, was the one employed by the Cubans. It was a burning palm leaf, the smoke being fanned into the hive. The leaf of the **palma prieta** was perhaps the best. The native hives were hollow logs about 5 feet long, placed in a horizontal position on benches, both ends of the log being left open. With this type of hive the palm fan was almost as good as the modern bellows smoker, when it came to subduing a colony of cross bees.

California.

Inverted Demareeing

By Lewis P. Tanton

To requeen a colony, prevent swarming, eliminate European foulbrood and accelerate surplus honey production while retaining two queens in one hive, all in one practical operation, is the theme of my story. Primarily my object was to eliminate foulbrood, and in the working out of this problem the other advantages were disclosed to me.

I use only the eight-frame Langstroth hive. In the spring I gave the queens ample laying room until two bodies were filled with eggs and brood. Then lifting the queen out, on a frame of good clean and unaffected brood, I put her in a third hive body filled up with new, clean combs, or part combs and part foundation. A comb or sheet of foundation was inserted to replace the removed brood frame. Next, on top of these bodies I placed a super or, in extra strong hives, two supers. Above these I put a queen excluder, and on top of these the hive body containing the old queen. All queen cells below the excluder must be cut out to ensure against swarming. This process produces the following results:

The swarming fever passes off because there is no queen to go out with the would-be swarm.

There will be an interval of about five weeks before young queens will be hatched, mated and laying in the lower chambers, but in all cases cells will be started and new queens produced. In this interval all the brood in these chambers will hatch out, all foulbrood (European) will be cleaned away, and the cells and surplus supers filled with honey. The bottom or main brood chamber will be left partly empty—with apparent purpose—by the bees, in which the new queen will commence laying.

You have now the option of killing the old queen, still busy at her trade in the top story, or you may let her continue laying, thus keeping two queens busy in the one hive.

It may chance that in some hives you have queens that are not desirable as breeders. In such cases the queen cells may be all cut out about a week after the operation and cells inserted from the more desirable stock. In the fall, if you find a queenless colony, or call for a queen, there is an extra queen available on the top of each stand from which you can select and use the best, and before wintering kill off the remainder. Or they may be disposed of just before the fall honey flow and, as the bees hatch out, they will store honey in the top super. At this stage the excluder may be removed.

I tested this last summer on six hives without a single failure. It was, of course, on only eight-frame hives and in a district where the maximum of surplus honey may be placed at 100 pounds in a season, but the method can be enlarged to suit more productive conditions, and ten or twelve-frame hives, by simply supplying more of super or surplus storage room.

While large and scientifically conducted apiaries may have methods that suit them better, I am convinced that there are thousands of small bee keepers and those who cannot be constantly on the watch for threatened swarms to whom this process would be a most happy relief from expected troubles, and a certain convenience for all the purposes which I have outlined.

This experience came as a new thing to me, but it may not be new to some who have possibly practiced along similar lines, but I am sure there are thousands who never read or heard of it, and to whom it will prove a profitable revelation.

(The above method is a variation from the Demaree method in that it places the queen above instead of putting the brood there. It may prove interesting to some of our readers.—Editor.)

REQUEEN WITH

KNIGHT'S

Line Bred Three Banded Leather Colored Italians

They are the best honey gatherers and best winterers. Select young laying queens, $1.00 each; 5 for 80c each; 10 or more 75c each. Select tested queens $1.50 each. All queens sent in large 6-hole comfortable cages with 1925 health certificate. Pure mating and safe arrival guaranteed.

JASPER KNIGHT
Hayneville, Ala.

—QUEENS OF—

Moore's Strain

OF ITALIANS PRODUCE WORKERS

That fill the supers quick
With honey nice and thick

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.
Untested queens, $1.00; 6, $5.00; 12, $9.00. Select Untested, $1.25; 6, $6.00; 12, $11.00. Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE, QUEEN BREEDER,
Route 1, Morgan, Kentucky.

MONTANA & NORTHWEST

Lewis "Beeware," Dadant's Wired Foundation, Woodman Smokers. Cans and Glass Honey Containers Write for Catalog.
Service. Quality.

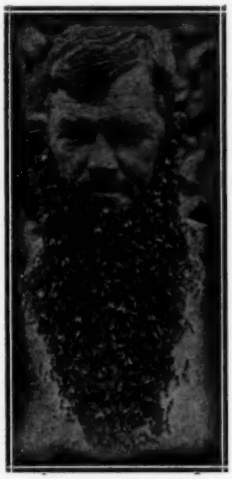
B. F. SMITH, JR.,
Fromberg, Mont.

Golden Queens and Banded Bees

Untested queens	$1.00 each
Tested queens	1.50 each
Bees	$1.50 per lb.
Nucleus	$1.50 per frame

Bees inspected; free from disease.

J. W. SHERMAN
Valdosta, Ga.



"The best we know how to produce."

September Queens

We are now enjoying a light honey flow, making conditions ideal for producing the very best queens. With our improved methods of queen-rearing and breeding queens better than before, our queens are making a great hit this season.

We now have in operation 1218 Jumbo nuclei and believe we can give reasonably prompt service for the rest of the season. Late requeening of strong colonies will put them in condition to produce the maximum crop of honey next season, while of course you want your weaker colonies headed by an A1 queen before winter.

Prices for the remainder of the season: 1 to 4 inclusive, $1.50 each; 5 to 9, $1.45 each; 10 to 24 inclusive, $1.40 each; 25 to 49 inclusive, $1.35 each; 50 to 74 inclusive, $1.30 each; 75 to 99 inclusive, $1.25 each; 100 or more, $1.20 each. Breeding queens, $10 each. Our book, "Queen Rearing Simplified," $1.25, postpaid. Jay Smith Pushin Introducing Cage, 35c each, postpaid.

JAY SMITH

Route 3, Vincennes, Indiana

Yakima Valley, Washington

Great honey producing center of the northwest has many users of

D. and B. Re-Processed Water Formalin

Read What One Says:

"During December, 1924, and January, 1925, we used D & B Solution in the treatment of 4000 infected brood combs, many of which were rotten with AMERICAN Foulbrood. These brood combs have all been in use throughout the present season and subjected to rigid inspection. We have failed to find re-occurrence of Foulbrood in any of these combs. The low cost of D & B Solution compared with other means of control effects great economy in saving diseased combs."

This statement is from one of the foremost beekeepers of the great Yakima Valley, who owns and operates 750 colonies of bees and this season produced 42 tons of extract honey. It speaks volumes for the one solution, the cost of which is well within reach of the beekeepers and the effectiveness of which is now well established.

THE D. AND B. CHEMICAL CO.
800 E. 37th Street, Portland, Oregon
OR
THE DIAMOND MATCH CO., Distributors
Chico, California or Pierce Building, St, Louis, Mo.

Italian Queens as Good as Money Can Buy for September

Untested, 75c each or $8.00 per dozen. Tested 90c each or $10.00 per dozen.

Safe arrival guaranteed.

D. C. JACKSON, Funston, Ga.

Beekeeping Suggestions

By W. H. H. Piatt.

Recurring to my offer of suggestions re metal covers, slipping of bodies on bottom boards in moving, and preventing pain from stings, will say:

(a) Metal Covers — When the frame for metal cover is set up ready for nailing on the metal, take from the sides, backs or bottoms of the cellular pasteboard shipping box in which the covers are shipped one or two pieces, as may be necessary to equal the width or the length of the cover, inside measurement. Cut off the excess of length to like size, thus having a cellular pasteboard insulation in size coinciding with the inside measurement of the cover. Place this insulation on the wood frame under the metal cover and nail the metal cover down. Thus you have, without additional cost, very materially and substantially improved the insulation of the completed metal cover both in its summer and winter use. If the metal sheets were one-tenth of an inch larger each way, increasing the turned-up part by that amount, they would be slightly easier to nail on, but with a little care there is no difficulty in putting them on at present size, and the improvement of the cover over putting either a newspaper or nothing between the metal and the wood top is very decided.

(b) To prevent slipping of bodies on the bottom boards in moving, take four wooden strips, each 20 inches long, two of them three-fourths of an inch thick and 4 inches wide, and two of them three-fourths of an inch thick and 1 inch wide. Nail the latter to the former as 1-inch cleats, by placing the three-fourths inch dimension upon the 4 inch dimension, with their edges flush for their length, and thus the 4-inch strips each have a 1-inch cleat flush with one side, leaving 3¼ inches above the cleat. Flush with one end of each of the strips thus cleated set in a piece, 3¼ inches long, three-fourths of an inch thick and 1 inch wide, an inch from each end of the cleated strip, and on the out or opposite side of the strip from the cleats put a staple or hasp crosswise, an inch and a half or two inches wide, as may be most conveniently at hand.

Tip the hive that is to be moved slightly, shoving the 1-inch cleat side under the bottom board, the 4-inch side up by the side of the hive, the open end to the front of the hive and the cross-cleated end flush against the back of the hives. Lift the opposite side of the hive an inch and in a like manner place the other cleated piece on the opposite side. Take a clothes line, web or leather strap and run it through the hasps, around the cleats, beginning at the back around to the front and tie or buckle to the back, drawing it taut. Place V-shaped screen wire in the mouth of the opening of the hive. Slip a block 1 inch thick, 2 inches wide and 4 or 5 inches long on either side at the front end of the hive between the

strap and the wire to hold the latter in place. You will observe by this simple, adjustable device to any hive, the hive cannot possibly slip forward, backward or sidewise on the bottom board, though you are moving it a few feet or a few miles, and the only additional tying necessary is a cross-strapping of either two cords or straps over the top of the hive and outside of these cleated strips.

(c) Stings—To prevent or take out the swelling or soreness from stings, apply to the spot a mixture of salt and sour cream. If the latter is not available, use sweet cream with lemon juice. If applied immediately or almost immediately after the sting, the pain will quickly disappear and there will not be any swelling, and liberal applications commenced any time before the maximum of pain and swelling is reached will check and relieve it.

The foregoing are actual results of my amateur experience, and if of any service to you, you are most welcome. Missouri.

(The above are excellent suggestions, especially using pasteboard insulation in the cover. As to the cure of stings, much depends upon how much poison got into the wound, under the skin. After the poison is in the blood, it is almost impossible to prevent its action. It is most important to brush away the bee promptly when it stings. We have often been stung and removed the sting so quickly that the poison had no time to be injected into the blood. Sometimes the sting strikes a small artery; then the diffusion of the poison is so prompt that no remedy will avail.—Editor.)

Breathing Bees' Odor--(Oh! Oh!)

We clip the following from the "Idaho Statesman":

"I am not a physician, but I think that if you will set three colonies of bees just outside your bedroom window on the ground and arrange three pipes leading into each and you breathe through that one pipe, sucking the wondrous air that is prepared by the bees, that you will heal yourself of rheumatism, consumption, paralysis, asthma, typhoid fever, pneumonia and some other diseases in an astonishing short time. Any time, day or night, that you feel like it, take 50 long breaths through the pipe. Put a strainer on the ends of the pipes that go into the center of the hives. If you would arrange to hit on the hives and cause the bees to roar with anger and fight, your healing would be double assured. —B. W. Rice, Caldwell, Idaho."

Probably, if the writer of this were to try breathing 50 long breaths every few hours, without taking the trouble of using a pipe from the inside of a beehive, he might get similar results. I remember a rabbi taking long, deep breaths, for several minutes in succession, and calling it "taking an oxygen cocktail." Perhaps the odor of the bees would increase the effect, but undoubtedly the "long breaths" have a very healthful action.

Mack's Queens

Still hold their own. Seldom is there a day goes by that we don't get testimonials from our customers stating that our queens are the best they ever received and the way orders have been coming in from all over the country where our queens have made their appearance we half way believe it.. The cover page of "GLEANINGS" for July shows an apiary of one of our customers in Wisconsin headed with MACK'S QUEENS. He stated that his best colony is stacked seven high and sealed solid, or nearly so. Maybe you can raise your product by heading your colonies with Mack's Queens. We suggest that you try it. We assure you that you will have nothing to regret.

Prices for the remainder of the season:
Select untested only----------$1.00 each; $10.00 a dozen; $75.00 per hundred

Everything guaranteed but safe introduction, and we send good and efficient directions for that.

HERMAN McCONNELL, Robinson, Illinois
(The Bee & Honey Man)

HUTZELMAN'S SOLUTION

Has stood the severest tests during the past four years. The Alcohol-Formalin Solution has passed tests where water-formalin solution and other water solutions have frequently failed, because they do not always penetrate sealed larvæ. Water will not penetrate propolis.

The cost of Alcohol-Formalin is a small part of the treatment, only one recurrence after using water-farmalin may be enough to offset the extra cost of Alcohol-Formalin many times over.

Save your infected combs by disinfecting with

HUTZELMAN'S SOLUTION
Patented October 14, 1924.

This patent covers ALL solutions containing alcohol, formalin and WATER. For full information ask your dealer or write to

J. C. HUTZELMAN, M. D., Glendale, Ohio.

Queens Queens Queens

THREE-BAND STRAIN ONLY

We are now prepared to furnish queens promptly from our strain of Hustlers. They are bred for business and will get results for you. Cells are reared in colonies boiling over with bees, thus insuring large, vigorous, prolific queens. All queens are mated in large three-frame nuclei and are allowed to start laying before caging. Only one grade—Select. You cannot buy better queens anywhere at any price.

Select untested, $1.00; 12, $10.00; 100, $70.00. Tested, $1.50; 12, $15.00.
Safe arrival and satisfaction guaranteed on every queen.
There is no disease in our apiaries, and never has been.

CANEY VALLEY APIARIES
YANCEY BROS., Owners, Bay City, Texas.

FREE
Four Helpful Booklets

Any four of the following:

Every Step with Package Bees
Every Step with American Foulbrood
Every Step with European Foulbrood
Every Step in Transferring Bees
Every Step in Grading Honey
Every Step in Bottling Honey
Every Step in Moving Bees

Practical Outlines—Pictured Step by Step—Choice of Four Free.

To Subscribers who renew or to new subscribers received on or before November 1, 1925.

Tear out this ad—Mark booklets wanted—Mail with subscription promptly to

American Bee Journal, Hamilton, Illinois

One year $1.50—Three years $3.00

NOTE—THIS SAME AD APPEARED IN THIS SPACE LAST MONTH. WE ARE DUPLICATING THIS ANNOUNCEMENT AGAIN BECAUSE THE RESPONSE FROM WESTERN PRODUCERS WAS SO GENERAL AND INSTANTANEOUS AS TO SHOW A GREAT INTEREST IN THE MATTERS DISCUSSED BELOW. THIS LIST WILL NOT ONLY INTEREST YOU, BUT SAVE YOU MONEY. USE THE COUPON TODAY, TO GET DETAILED DATA ON THESE MONEY-SAVING BARGAINS.

Return the Coupon below and Save Money!

"Never Before"—

The most valuable list Western Producers will receive this fall is our 1925 container list.

For in addition to advantageous prices this list announces several items that are of utmost importance to Western Growers.

The following facts will show why this descriptive and detailed price list will interest every producer who wants the best possible prices.

For the first time, we are listing 60 lb. cans in the bulk; 24 cans packed in one light shipping crate, at money-saving prices.

For the first time, corrugated cases are offered, in which to ship one 60 lb. can of honey. This package is a great convenience in handling. Cases for sale separately, or packed with cans. 60's so packed cost less.

Our all-pine "Display Case" for shipping and display-comb honey is the cheapest satisfactory wooden case you can buy. It is a tremendous success. Complete with glass. Worth investigating.

If you expect to buy a honey tank this fall, you will be interested in the special offer made in this list on guaranteed Root Honey Tanks.

Corrugated cases prepared especially for our trade are complete in packages of ten with tape to seal each case. An advantage to busy producers, which costs nothing extra.

CARLOAD STOCKS OF GLASSWARE, TINWARE, CANS AND COMB HONEY CASES HERE AT COUNCIL BLUFFS TO INSURE PROMPT DELIVERIES.

NEVER BEFORE HAVE WE BEEN ABLE TO MAKE SUCH ADVANTAGEOUS PRICES ON A FULL LINE OF CONTAINER EQUIPMENT. THAT IS THE REASON WE URGE YOU TO SEND IN THE COUPON BELOW NOW. DESCRIPTIVE LITERATURE WITH PRICES WILL BE MAILED TO YOU AT ONCE.

A TWO CENT STAMP SPENT TODAY TO RETURN THE COUPON WILL RETURN DOLLARS TO YOU TOMORROW

SERVICE COUPON
TEAR OFF AND MAIL

To The A. I. Root Company of Iowa, Council Bluffs, Iowa

Please send me descriptive literature giving full detail about the new package listed on your 1925 container price list.

Name .....

Address .....

.....

The A. I. Root Co. of Iowa, Council Bluffs, Iowa

Crop and Market Report

Compiled by M. G. Dadant.

For our September report we asked our correspondents to answer the following questions:

1. For our September number will you please report on the 1925 honey crop? How does it compare with 1924?
2. Do you anticipate any difficulty in disposing of the 1925 crop at 1924 prices?
3. What are buyers offering for honey?

THE CROP

There is scarcely any doubt but that the total crop for the year 1925 will be considerably in excess of 1924. In the New England states the crop has been about the same, as it has also in New York. Pennsylvania has had a considerably better crop than a year ago, whereas Ohio has had somewhat less, although late reports indicate that the rains have somewhat ameliorated the conditions.

The southeastern sections of the country have not had as good a crop as last year, and owing to the rapid development of population in sections of Florida, Georgia and the coast, it would appear that there would be no difficulty whatever in disposing of all of the honey crop of the southeast locally without using the outside market. Alabama has had somewhat better crop than a year ago, as has Mississippi. Louisiana will not have more than a normal crop, and Tennessee and Kentucky are very short.

The crop in Texas has been exceedingly short; in fact late reports would not indicate any betterment of conditions there and it is doubtful if they will have sufficient honey to feed their own population, and may become an importing honey state instead of an exporting state.

Michigan is having a better crop than a year ago, especially in some sections. The crop seems to be spotted. Wisconsin is also having an extra large crop, as is Minnesota. Indiana has been too dry for a good crop, but Illinois and Iowa, as well as northern Missouri, are harvesting a much better crop than 1924. South Dakota and parts of Nebraska and Kansas have been too extremely dry and the crop has not come up to expectations. North Dakota expects to have a normal crop or better, and Montana is getting considerable more honey than a year ago, although 1924 was a good crop for them. Wyoming will be normal. Eastern Colorado will have a short crop, but the western slope seems to be having a very fair season. Idaho will have about the equal of last year, as will Washington. Utah reports about the same as 1924. Nevada probably will have a little more. Arizona and New Mexico have done wonderfully well in spite of the dry weather, but will not have any great crop, as in 1924. Southern California will have probably less honey than a year ago, although the late rains there somewhat bettered the conditions. The orange crop, however, was very much shorter than 1924 and California without any doubt will be a honey importing state instead of a honey exporting state. The northern sections of California and Oregon and Washington have done remarkably well. All the crop will be probably in excess of 1924, but is being offset by the fact that the best crops are located in states of large population usually and which have been cut short of fruit by the drought early in the spring. We do not see any reason why there should be any diminution in the prices of honey, however, over 1924. If there are any, probably comb honey will suffer, because it appears as though the demand was not holding up to what it has been in former years, whereas the supply will probably be augmented by the throwing onto the market of numberless lots of small quantities of comb honey on the part of the central western beekeepers. Many beekeepers are stating that they will not sell their honey for less than 10 cents per pound, and, on the other hand, there are a few who are expecting to take one to two cents less than a year ago.

However, they are the exception and are probably figuring on local conditions rather than on general conditions throughout the country.

The "price cutter" has appeared, there being evidences in the large cities in Michigan especially to this effect. Probably the market will be somewhat hurt by the price cutting of the smaller producer and by some of the larger ones as well. There are no indications, however, of any short demand for honey and there should not be any serious reduction in price over a year ago. In fact, we would not be surprised to see prices stiffen after the first "slump" of the excited beekeeper has subsided.

We learn of several cars of honey having moved at a price of 9 cents per pound, f. o. b. intermountain territory, which would about equal a price of 10 cents to 10½ cents f. o. b. central western states.

This, of course, is for white honey. We have heard of several dealers who are now offering white honey on a basis of 10 cents f. o. b. and some lots being sold at 10 cents f. o. b. delivering point.

With reference to our quotations on honey as given in the last American Bee Journal, and which we are repeating herewith, there would possibly be some changes owing to the fact that some of our best producing states will be importers this year instead of exporters of honey. We were criticized on our California quotation on this very account. Justly so.

If California becomes an importing state instead of an exporting one, then the prices on their product, either home-grown or imported, should be raised in the neighborhood of 2 cents per pound. This also applies to any other state which goes into the importing class. We are rather struck with the optimistic attitude on the part of most all beekeepers, although some of them are discouraged over the price cutting on the part of neighbors. However, everyone, almost without exception, believes that honey should be worth as much as last year, and many beekeepers are already preparing to dispose of their crop and using additional amounts.

As far as a real solution of the marketing problem is concerned, this has not yet been reached. Individual efforts will be made by beekeepers scattered far and wide, but there is no concerted effort which is going to make for stabilization of the market, except possibly in some states which are practicing co-operation, such as New York, Wisconsin, Colorado, Texas, etc.

Undoubtedly, the short fruit crop in the east and central west will have a great deal to do with disposing of the honey crop of the small producer and will have a quieting effect on the ordinary price cutter.

	5-lb. Retail	Retail 10-lb.	Ton Lots 5-gal. White	Carload 5-gal. White	Carload 5-gal. Amber	Comb Fancy Case	Comb Car lot		Bulk Comb Retail	
							Choice	F'cy	5-lb.	10-lb.
East	$1.25-$1.50	$2.20-$2.50	12c	11c		$6.00-$7.00	$5.00	$5.50		
Southeast	.90- 1.25	1.75- 2.00	11c	10c	9-10c	5.50-6.00	4.50	5.75	$1.25	$2.50
Texas and Southwest	1.00- 1.25	1.75- 2.00	11c	10c	8-9½c		4.80	5.50	1.50	2.75
Central West	1.15- 1.35	2.00- 2.25	13c	11-12c	8-9½c	6.50	4.75	5.50	1.50	2.75
Plain States	1.00- 1.15	2.00- 2.15	12c	10-11c	8-9½c	6.00				
Inter-mountain	.90- 1.25	1.75- 2.00	12c	9-10c	8-9c	6.00	5.00	5.50		
Coast	1.00- 1.25	2.00- 2.25	12c	10-11c	9-10c	6.00	5.00	5.50		

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

As a measure of protection to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

BEES AND QUEENS

HARDY ITALIAN QUEENS—$1.00 each.
W. G. Lauver, Middletown, Pa.

WARRANTED—Pure mated Italian queens, $1.00 each by return mail; 10% off on 10 or more orders. Daniel Danielsen, Brush, Colo.

SIMMONS QUEENS—Golden and three-band. One, $1.00; six, $5.50; twelve, $10.00. No disease. Shipments by return mail. Satisfaction guaranteed.
Fairmount Apiary, Livingston, N. Y.

SUPERIOR ITALIAN QUEENS by return mail, any quantity, 50c each. Guarantee safe arrival, satisfaction; no disease; ship only the best. Queens to please or your money back. All orders will be filled by return mail. W. C. Smith Co., Calhoun Ala.

FOR SALE—Golden Italians bred for all the good qualities bees should possess, as well as for color. Queens only, untested, $1.00 each; 6 for $5.25; 12 or more, 75c each. Postpaid and safe arrival insured. State certificate of health included.
Hazel V. Bonkemeyer, Randleman, N. C., Rt. 2.

GOLDEN ITALIAN QUEENS for 1925; the big, bright, hustling kind (the kind that gets the honey). Satisfied customers everywhere. Untested, 90c each; 6, $4.50; 12, $9.00 $70.00 per 100. Tested, $1.50 each. Safe arrival guaranteed.
E. F. Day, Honoraville, Ala.

FOR SALE—Three-band Italian queens that produce hardy and gentle bees the kind that get the honey. Untested, 80c each; 6, $4.75; 12, $9.00. Tested queens, $1.50 each. Safe arrival and satisfaction guaranteed.
Robt. B. Spicer, Wharton, N. J.

THREE-BAND ITALIAN QUEENS — One, select untested, $1.00; one dozen, $10.00. One select tested, $1.50.
J. Allen, Catherine, Ala.

GOLDEN ITALIAN QUEENS—Untested, $1.00; 6 for $5.40; 12 or more, 80c each. Tested, $1.50; select tested, $2.50. Apiary inspected by state inspector; no disease found. Safe arrival and satisfaction guaranteed. D. T. Gaster, Rt. 2, Randleman, N. C.

TEN YEARS of experience in breeding queens of quality Goldens, also gray Caucasians. Golden queens: one, $1.25; dozen, $11.50. Gray Caucasians, one, $1.50; dozen, $15.00. Pure mating. Safe arrival guaranteed in United States and Canada.
Tillery Bros., Rt. 5, Greenville, Ala.

FOR SALE—Choice bright Italian queens. I have been building up this strain for the last 20 years for vigorous hustlers, good winterers, gentleness and fine color. These queens will equal the best on the market. Health certificate goes with queens. Prices: untested queen, $1.25; 12 untested queens, $12.00; 1 breeder, $5.00.
Emil W. Gutekunst, Colden, N. Y.

FOR SALE—Golden queens producing bees yellow to tip; untested, $1.00; tested, $1.50; select tested, $2.50. Disease free; safe arrival and satisfaction guaranteed.
Address H. G. Karns, Victoria, Va.

FINEST Italian queens, $1.00 each.
Wm. R. Stephens, Wingate, Indiana.

BRIGHT ITALIAN QUEENS—One, $1.00; 6 for $5.00 or 12 for $10.00. Write for prices on large orders or package bees.
P. B. Skinner, Greenville, Ala.

BEES AND QUEENS—Golden and three-banded. Ready to ship March 20. Tested, each, $1.00; 12, $10.00; 50, $40.00; 100, $75.00. Untested, each, 75c; 12, $8.40; 50, $32.50; 100 $55.00. Satisfaction guaranteed. I. N. Bankston, Rt. 6, Dallas, Texas.

SHE-SUITS-ME QUEENS—Untested three-banders, $1.00 each; 25 or more ordered in advance, 75c each. Safein cage with initial order. Allen Latham, Norwichtown, Conn.

BRIGHT three-banded Italian queens. Guaranteed in every way; 33 years' experience. Every queen a good queen. Price list sent on request.
J. F. Diemer, Liberty, Mo.

TRY my Caucasian or Italian 3-frame nucleus, also queens, and be your own judge. The yard inspected by the requirements of the law. Italian queens, 60c each.
Peter Schaffhauser, Havelock, N. C.

FOR SALE—Italian queens ready May 15. One queen, $1.00; 6 queens, $5.50; 12 queens, $10.00. W. W. Talley, R. 4, Greenville, Ala.

LEATHER COLORED ITALIAN QUEENS—$2.00; after June 1st, $1.00. Tested, $2.00. A. W. Yates
15 Chapman St., Hartford, Conn.

PACKAGE BEES and three-band Italian queens that please. Our twenty years experience here in selective breeding of queens and the shipping of bees are at your service. No disease in this section. For prices, references, etc, write
Allenville Apiaries, Allenville, Marengo County, Ala.

GOLDEN THREE-BANDED and Carniolan queens. Tested, $1.00; untested, 75c each. Bees in 1-pound package, $1.50; 2 pounds, $3.50; 3 pounds, $3.25. Safe delivery guaranteed. C. B. Bankston, Box 65, Buffalo, Leon Co., Texas.

FOR SALE

FOR SALE—160 colonies or more of bees. No disease. 30 to 100 lbs. of honey in supers; flow just started from cotton. Reasons for selling, failing health.
A. J. Kolb, Ennis, Texas.

FOR SALE—50 colonies of fine three-band Italian bees with young queens, in Root 10-frame Standard hives. Never had disease.
Noah Bordner, Holgate, Ohio.
Reference, Holgate Commercial Bank.

FOR SALE—50 colonies of bees, comb and extracting equipments, located eight miles east of Canton on No. 9 hard road. Better come and look. F. R. Belt, Canton, Ill., R. No. 5.

FOR SALE—800 colonies and modern extracting outfit. Located in what is known as "The land of milk and honey" of the middle west. If you have cash and mean business write to "Beekeeper," care Ameri can Bee Journal.

FOR SALE—Bees and equipment worth $200, located in Lincoln County, Montana, on account of health of owner will be sacrificed for $135 cash. Small modern home with one acre of land, healthful climate, good water, good school, ready market for all honey from large apiary. Write for price and terms.
B. F. Smith, Jr., Fromberg, Mont.

HONEY AND BEESWAX

FOR SALE—Two cars strictly water-white extracted honey in new 60's. Honey all from new combs this year.
S. F. Lawrence, Dwight, N. D.

WHITE CLOVER HONEY—Any quantity.
Roland Brandt, Postville, Iowa.

FOR SALE—A quantity of extracted white clover and sweet clover honey of highest quality. Write for prices, stating quantity desired and how put up. Sample 10c.
Emile J. Baxter, Nauvoo, Ill.

FOR SALE—Well ripened clover honey in 160-lb. kegs. Write for prices.
Julian Root, Jordan, N. Y.

FOR SALE—Our fine quality 1925 crop white and sweet clover honey. Case of 120 lbs., 12c per lb. Sample 20c.
Martin Carsmoe, Ruthven, Iowa.

FOR SALE—Clover honey in 60-lb. cans, two in a case, 12c per lb. f. o. b. here.
Harry W. Beaver, Troy, Pa.

FOR SALE—New crop honey, finest quality, put up in 60-lb. cans, also 5-lb. pails. Prices on request.
W. M. Peacock, Mapleton, Iowa.

FOR SALE—White and sweet clover comb honey. W. D. Toler, R. No. 3, Gardner, Ill.

FOR SALE—Choice white clover extracted honey in 60-lb. cans. Prices on request. Noah Bordner, Holgate, Ohio. Reference, Holgate Commercial Bank.

FOR SALE—Well ripened sweet clover honey in 5 and 10-lb. pails. Write for prices. Oscar Skow, Dunlap, Iowa

FOR SALE—50,000 lbs. of very choice white clover honey. Write for prices.
J. M. Gingerich, Kalona, Iowa.

FOR SALE—Sweet clover and white clover honey in 60-lb. cans; white to water-white in color and heavy body. Beekeepers who need honey for their trade and solicitors write for prices.
The A. I. Root Company of Iowa, Council Bluffs, Iowa.

FOR SALE—Choice fancy 1925 crop white clover extracted honey in new 60-lb. cans. tors write for prices.
Edw. A. Winkler, Joliet, Ill.

SWEET CLOVER COMB HONEY—None better. Also Dark Cornish and Mottled Houdan chickens.
L. Madsen, Gardner, Ill.

FOR SALE—Clover honey in 60-lb. cans.
A. G. Kuersten, Burlington, Iowa.

CLOVER AND BASSWOOD HONEY blended by the bees. Color white, body fine. Prices upon request. State amount wanted.
W. A. Jenkins, Rock Port, Mo.

EVER HEARD of Rocky Ford Cantaloupes Sweet as Honey? We have the honey, in 5 and 10-lb. pails, at 15c; 60-lb. cans at 12½c. Absolutely the finest. Order now.
John H. Leecing, Rocky Ford, Colo.

FOR SALE—150 cases comb honey also extracted honey in 60-lb. cans at 11c by the ton, while it lasts. New cans and cases.
Elmer Kommer Woodhull, Ill.

HONEY FOR SALE IN 60-LB. CANS—Clover at 13c lb.; white orange at 16c lb., both crystallized; if liquefied add 1c lb. Also southern amber at 11c lb; southern light amber at 12c lb., and Florida white tupelo at 16c lb.; these three grades all liquefied and f. o. b. New York City for immediate shipment.
Hoffman & Hauck, Inc., Ozone Park, N. Y.

CONSIGNMENTS of comb and extracted honey solicited. Highest market prices obtained. Creole Trading Co., 1154 Tchoupitoulas St., New Orleans, La.

NEW COMB Honey now ready to ship.
H. G. Quirin, Bellevue Ohio.

BEESWAX WANTED—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or your own station as you may desire.
Dadant & Sons, Hamilton, Ill.

FOR SALE—New crop of fine quality white clover honey in 60-lb. cans.
Irvin Nordgaard, Peterson, Minn.

HONEY FOR SALE—Best quality fancy Florida white tupelo. In 33-gallon barrels and 60-pound cans. Will not granulate. Sample 20c.
M. L. Nisbet & Brother, Bainbridge, Ga.

CLOVER HONEY for sale in 60-lb. tins. Sample 15c. Edward Hassinger, Jr.,
Greenville, Wis.

FOR SALE—Honey in 60-lb. cans; sweet clover, basswood, white clover and other flavors. Tell us what you want. Beekeepers who need more honey for their trade, and solicitors should write us.
A. I. Root Co.,
230 W. Huron St., Chicago, Ill.

NEW COMB and extracted clover honey; prices on request.
Irvin A. Stoller, Latty, Ohio.

DESIRE to hear from producers of basswood flavored comb and extracted honey. Give lowest price wanted and how packed.
Linwood Apiaries, Mahtomedi, Minn.

WANTED—Car or less lots of extracted clover honey. Mail sample and quote lowest cash price. Also get cut price circular on cans and pails for your 1925 honey crop.
A. W. Smith, Birmingham, Mich.

FINE QUALITY clover honey. Prices upon request. Case or carload lots.
C. S. Engle, 1327 23rd St., Sioux City, Ia.

FOR SALE — White and amber extracted honey. Write for prices. State quantity wanted. Dadant & Sons, Hamilton, Illinois.

FOR SALE—Our own crop white clover and amber fall honey in barrels and cans; also white alfalfa in cans. State quantity wanted and we will quote prices. Samples on request.
Dadant & Sons, Hamilton, Ill.

FOR SALE—White and water white sweet clover honey; put up in 5-gallon cans. Strictly first-class in every way. Write for prices, stating quantity wanted.
Dadant & Sons, Hamilton, Ill.

FOR SALE—White honey in 60-lb. cans; also Porto Rican in 50-gal. barrels. Samples and prices on request.
A. I. Root Co.,
16-18 Jay St., New York, N. Y.

"BEEWARE" and Dadant's Wired Foundation for the Northwest. Catalog prices. F. O. B. Fromberg, Montana. Beeswax wanted. Write for prices.
B. F. Smith, Jr., Fromberg, Mont.

FOR SALE—Comb, extracted and chunk honey. Prices on request. Samples 15c.
F. W. Summerfield, Waterville, Ohio.

HONEY FOR SALE—Any kind, any quantity.
The John G. Paton Co.,
217 Broadway, New York.

SUPPLIES

FOR SALE—Good second-hand 60-lb. cans, two cans to a case, boxed. We have large stocks of these on hand. Please write for prices if interested. We are offering only good cans and good cases.
C. H. W. Weber & Co., Cincinnati, O.

FOR SALE—Modified Dadant hives and supers, in good condition. Combs are wired and free from disease.
William Larsen, Quinnesec, Mich.

ONE Root Automatic reversible 4-frame extractor, in first-class condition, $40.00.
A. G. Kuersten, Burlington, Iowa.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado
Honey Producers' Association,
Denver, Colorado.

CANS—Bright 60-pound cans. Sixty cents for case of two.
A. V. Small, Augusta, Kans.

MISCELLANEOUS

THE DADANT SYSTEM IN ITALIAN—The "Dadant System of Beekeeping" is now published in Italian, "Il Systema d'Apicoltura Dadant." Send orders to the American Bee Journal. Price $1.00.

WE HAVE NOW ON HAND from Paris, a number of copies of the excellent work of Perret-Maisonneuve, in French, entitled "L'Apiculture Intensive & L'Elevage des Reines." The first shipment was delayed over two months. The price of this very progressive work is $1.50 by mail.
American Bee Journal, Hamilton, Ill.

WESTERN HONEY BEE, 428 S. Hewitt St., Los Angeles, Calif., published by Western beekeepers, where commercial honey production is farther advanced than in any other section of the world. $1.00 per year. Send for sample copy.

GLEANINGS IN BEE CULTURE, published at Medina, Ohio, is the most carefully edited bee journal in the world. Its editor-in-chief is George S. Demuth. Its field editor is E. R. Root. Ask for sample copy.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

MAKE queen introduction sure. One Safin cage by mail, 25c; 5 for $1.00.
Allen Latham, Norwichtown, Conn.

WANTED

WANTED—Honey unfit for human consumption. State if fermented or not, quantity, price. Arthur Husted,
1202 Grant St., Madison, Wis.

REPRESENTATIVES WANTED — Illinois men with sales ability and well known through county can make large income weekly selling guaranteed motor and tractor oil in drums and half drums on thirty-day terms to farmers and preferred dealers. Must have auto. State age. Will arrange interview. We ship direct from nearby branches. Division Manager, Box 659, Decatur, Ill.

NEED—Several thousand cases fancy white white clover comb honey, also extracted, graded according to Wisconsin or Colorado Association rules. Quote lowest price and quantity for cash. Ref., Lincoln Trust and Savings Bank, Chicago.
A. L. Haenseroth,
3932 N. Hamilton Ave.,
Chicago, Ill.

WANTED—Extracted honey in large and small quantities, both light amber and white. Send sample and state lowest price.
Hyde Bros., New Canton, Ill.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering.
Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

Tennessee Meetings

A number of meetings have taken place the past month in Tennessee of which we were not informed in time to give them a notice. There are still three meetings to be held in September, as follows: Sevierville, September 4-5; Springhill, September 8; Knoxville, September 9. At Springhill, the meeting will be held in the queen yard of John M. Davis. The Knoxville meeting will be held in the bee yard of the University Farm.

Department Honey Grader

We have the following letter from the United States Department of Agriculture:

"The Bee-Culture Laboratory wishes to announce that in co-operation with the Bureau of Agricultural Economics, the work on standard color grades for extracted honey has been completed.

"A type of grader has been perfected which quickly and accurately determines the color grade of any sample of honey. The active principle of this grader consists of a wedge shaped vessel for containing the sample of honey to be graded; this, in turn, being compared with an inversely placed wedge of amber glass. The two wedges are viewed simultaneously through a slit which permits light to pass through from the rear. When the color of the honey and that of the glass wedge match, the color grade of the honey is indicated on an appropriate scale calibrated with the standard commercial grades of extracted honey. These grades will be recommended as standard for the United States by the Bureau of Agricultural Economics.

"Although the cost of the grader is high, it will give the beekeeping industry a reliable and permanent instrument for grading the color of honey. It will also serve as a standard for calibrating cheaper and more temporary graders. A grader of this type is sold by the Haubon Company, 288 Market St., Newark, New Jersey, for $40.00.

"The Bureau of Agricultural Economics will probably have these graders in their offices in the principal honey production localities, available for the use of beekeepers in those regions.

"The Bee-Culture Laboratory will be glad, on request, to determine the color grade of any sample of honey. A 4-oz. sample of clean, well strained honey in proper mailing tube will be sufficient for examination. No charge will be made for this service."

"Be-Ze-Be" Honey

The Be-Ze-Be Honey Co., Leadenhall Buildings, Leadenhall Street, E. C., England, claim that they are the only bottlers in the world that bottle only honey produced by them, and that their product is the largest of any one company. They have over 20,000 hives, extending over 125 acres, in the West Indies, and the pick of their crop is shipped to England for bottling, the remainder being used for manufacturing purposes in other countries. Their plant at Slough is capable of bottling over 200 jars per minute. The company put on the market three kinds of honey in order to cater for the taste of each individual, either clover (or amber) honey, bellflower (or golden) honey and granulated (or light solid) honey.

Honey Containers For Every Need

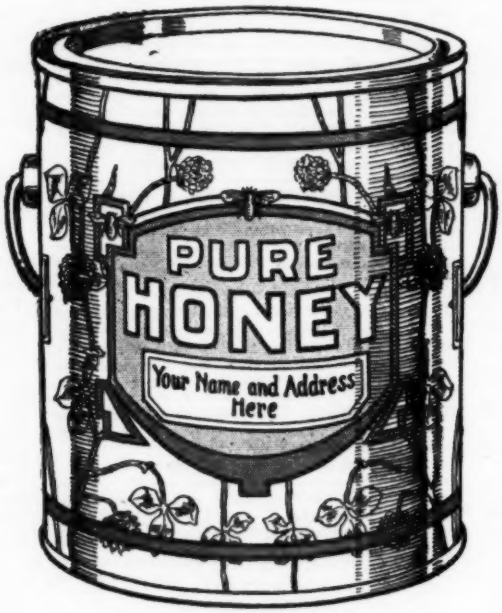
Honeyware Lithographed Pails and Cans

Gold pails and cans decorated in red, green and black—splendid display colors. Honey in these pails means a quality product.

Enameled Inside and Out

"Rust Proof" Long Lasting

Sample 5 lb. Pail Postpaid, 20c



PRICES F. O. B. HAMILTON, OHIO

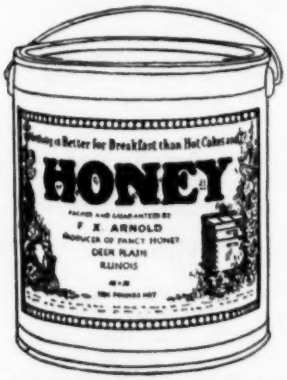
	Packed in dust proof corrugated cartons		Packed in Crates
	In lots of 100 or more, one size	In lots of 500 or more, one size	In lots of 500 or more, one size
2½-lb. cans	$ 8.00 per 100	$ 7.35 per 100	$ 7.00 per 100
5-lb pails	13.95 per 100	13.15 per 100	12.40 per 100
10-lb. pails	18.25 per 100	17.50 per 100	16.30 per 100

They Cost But Little More than the Plain Pail

and labels and their distinctiveness and advertising value make them easily worth the difference. They will not corrode or injure the honey.

Your name and addres *Printed Free* on orders of 100 or more of one size at a time.

Neat, printed letters —not stamped or stenciled.



Plain Friction Top Pails and Cans

Clean, tight pails at a price to save you money. Packed in dust proof cartons. Ask for label catalog when ordering.

F. O. B. Hamilton, Ill., or Keokuk, Iowa.

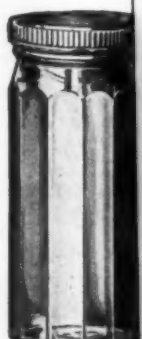
Mailing wt.	10 cans	10	50	100
2½-lb. Cans	6 lbs.	$ .60	$	$4.10
5 -lb. Pails	8 lbs.	1.00	3.45	6.90
10 -lb. Pails	12 lbs.	1.50	4.95	9.90

Celebrated "Diamond I" Glass Jars

Clear, white glass of octagon shape, displaying honey most beautifully.

Furnished only in corrugated reshipping cases complete with lids and wax liners.

		Mailing wt. 1 case.	Per Case.
24	8-oz. Jars	13 lbs.	$ .85
24	16-oz. Jars	23 lbs.	1.15
12	16-oz. Jars	12 lbs.	.65
12	32-oz. Jars	16 lbs.	.85



16 Oz.

Corrugated Paper Cases for Comb Honey

		Mailing wt. 5 Cases.	5	10	50
For 24	4¼x4¼x1⅞ Sections	15 lbs.	$1.25	$2.25	$10.00
For 24	4¼x4¼x1½ Sections	14 lbs.	1.05	1.95	9.25
For 24	4 x5 x1⅜ Sections	14 lbs.	1.05	1.95	9.25

Not more than 5 cases may be sent by parcel post in 1 package.

Wood Shipping Cases for Comb Honey Glass Front, Single and Double Tier

		Mailing wt. of 10.	10	50
For 24	4¼x4¼x1⅞ Sections, single tier	40 lbs.	$5.70	$25.60
For 24	4¼x4¼x1½ Plain Sec., sngl. tier	40 lbs.	5.10	22.70
For 24	4 x5 x1⅜ Plain Sec., sngl. tier	40 lbs.	5.10	22.70
For 24	4¼x4¼x1⅞ Sections, dbl. tier	44 lbs.	5.80	26.35

Dadant & Sons, Hamilton, Illinois

Citronelle Queens
30,000

Hives of bees headed with CITRONELLE QUEENS in U. S. and Canada. They are good. Ask your neighbor beekeeper about them.

PRICES

Untested queens ---------- 50c each, any number
Select untested ---------- 60c each, any number
Tested ---------- $1.00 each, any number

Satisfaction and prompt service guaranteed.

CITRONELLE APIARIES, Citronelle, Ala.

More bees for same cash for balance of season. Same service and bees. "Introduced and laying enroute to you." Health certificate attached. Satisfaction guaranteed.

JES DALTON,

Bordelonville, Louisiana.

BIG, BRIGHT, NORTHERN BRED ITALIAN QUEENS

Bred for beauty, gentleness and honey-gathering qualities.

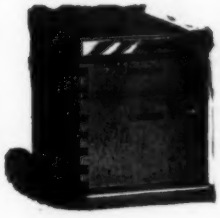
Delivery begins June 1. Untested, $1.00 each.

M. P. LE MUNYON
R. D. No. 3, Cassopolis, Mich.

HONEY WANTED

We are ready at any time of the year to take in small or large lots of extracted honey
Send us a sample and advise quantity you have and the price wanted

HOFFMAN & HAUCK, Ozone Park, New York



MR. BEEKEEPER—

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today. We pay highest cash prices and trade for beeswax.*

LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri

J. W. ROUSE, Mexico, Mo. W. R. PERRY, CO., Omaha, Nebr. A. M. HUNT & SONS, Goldthwaite, Texas, Distributors

SUPERIOR ITALIAN QUEENS

GUARANTEED TO BE AS GOOD AS THE BEST

One or 1,000 at 50 cents per queen
Tested, one year old at same price

Absolute satisfaction guaranteed

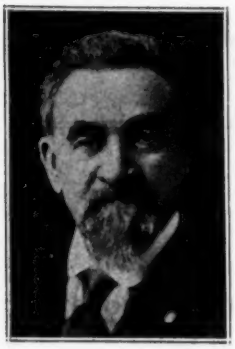
THE STOVER APIARIES

Tibbee, Miss **Telegraph Office, Mayhew, Miss.**

Burr Combs

By-Golly!

The Boss is away, so I'm doing this, (me, by—Golly), and when he gets back it will be done and he can't say a word. All the folks on this page aren't what they look like. I have asked every one of them to write a "Burr" for this month and all they said was "B'rr, I'm too busy." How about that? So I'm going to tell on them. Tell just what they're doing and let you folks lecture them all you want for their neglect. Here are their pictures so you will know just which one to pick at. Drop me a line so I can be out of town when you get here.

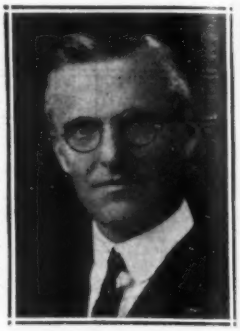


If anyone has the secret formula of youth it is Editor Dadant. He has the symptoms of youth, too, never stays home. He is in Ohio now at the State Convention, but this page will have to be hustled right through the press before he turns up here again. I have often wondered why he likes to travel, but only found out last winter, when he came back from the International Congress in Canada. The first thing he told us was of the pretty French girls who waited on his table at "La Circle des Fermiers." Mrs. Dadant must have lots of patience.

This is Louis (L. C.) I'm plumb disappointed in him. He wrote a real good page here in May—"From Ducks to Dandelions." But, pshaw, he's clear out of line of either ducks or dandelions. He's the factory end of Dadant & Sons and they are moving to a new home. That tells the story. If Louis gets a duck I'll bet it makes a small-sized meal for his family this year. And if he's made dandelion wine I haven't had a mouthful of it, and as for crawfish—well it takes a lot of them to make a meal and there are no shells around the place. So I say I'm plumb disappointed in Louis. Can't see why he didn't write us a "Burr" since that one and just tell the truth about what he's been doing.

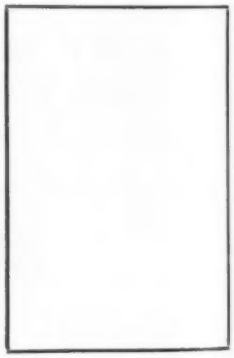
Maurice is the fellow who disgraced himself right before his sweetheart by eating a crawfish—shell, claws, whiskers and all. I don't see how she could marry him after that, do you? I expect, though, that this cave-man stuff really is fine "dope" with the ladies. You remember the pictures of the gladiator shows in old Rome, how the ladies were banked along the bald-headed rows with their thumbs down? That was the sign for the big brute in the middle with his foot on the fallen foe to kill him quick. But really now, Maurice is a good fellow and is doing his best to get beekeepers to read this paper. The only thing I have against him is that he won't write "Burr Combs," except now and then.

Another puzzle picture. This is Geo. Watt. He is not young and handsome, or single, but I've a lot "agin" him. In the first place he won't write a "Burr"; secondly, he's afraid of his face. He won't have a picture taken. Lastly, he and I have all the apiaries on our hands. He does most of the work and he won't do it my way. I can't stand such a man. Maybe he'll write a "Burr" if I get him mad.



This is the chief when the chief is away, and when he's away I don't know who's chief. It's the old case of the cat and the mouse. Pellett likes honey plants so well that they draw him clear across the continent. He is somewhere in British Columbia now, the peak end of a long trip through Manitoba, Saskatchewan and the Peace River Valley. He will return through Wyoming and Montana, with a full note book, many pictures, and new material galore. It's just what he likes and we can't keep him in Hamilton. But I haven't a thing on him, folks, except that he's a regular tramp.

Henry's gone gallivantin' too. Took his family and made a run straight for northern Minnesota, just when he suspected most that he was to write "Burr Combs." I call that just plain ordinary. He and I took a little private car (a Cadillac), and covered about 2,000 miles in Minnesota, North Dakota, South Dakota Nebraska and Iowa and now he's gone off without telling a thing about it. I suppose he thinks the one of us that's left will do it, then he won't have anything to do when he gets back. He's supposed to keep the wheels greased here, so if one of the boys is tipped off right to bust up a few machines he may not get away so quick next time.



This is a futurist picture of Carroll Swanson. It is not the printer's fault and Carroll can hardly be blamed. You see he is young and single and good looking. He has been asked repeatedly for a picture, but I have had to warn him, too, for fear our lady subscribers would pester him with proposals. That would be tough, as there is already one fine young lady here and her hopes must not be shattered. Perhaps, now you know about her, he may dig out that picture, so you may see the fellow who wrote about "Rolls Rough" and "Ambitions." He says he won't write any more until it is his turn.

This is "me," and that's saying enough. What's left when these fellows get through will only need a psalm tune. Anyway, maybe we'll get a whole hive full of "Burr Combs." Watch the smoke!